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NATIONAL ENERGY SECURITY ACT OF 1991

(Subtitle A of Title III)

HEARING
BEFORE THE
SUBCOMMITTEE ON
ENERGY REGULATION AND CONSERVATION
OF THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ONE HUNDRED SECOND CONGRESS

FIRST SESSION

ON

S. 341

TO REDUCE THE NATION'S DEPENDENCE ON IMPORTED OIL, TO PROVIDE FOR THE ENERGY SECURITY OF THE NATION AND FOR OTHER PURPOSES

MARCH 19, 1991

PART 12



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(III)

NATIONAL ENERGY SECURITY ACT OF 1991

(Subtitle A of Title III)

TUESDAY, MARCH 19, 1991

U.S. SENATE,
SUBCOMMITTEE ON ENERGY REGULATION
AND CONSERVATION,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:05 p.m. in room SD-430, Dirksen Senate Office Building, Hon. Timothy E. Wirth, presiding.

OPENING STATEMENT OF HON. TIMOTHY E. WIRTH, U.S. SENATOR FROM COLORADO

Senator WIRTH. The committee will come to order.

Thank you all very much for being here and operating expeditiously on this.

I believe there is going to be a vote around 2:15, and then we expect a series of votes in the afternoon. So I am going to ask our witnesses—I already talked to Mr. Detchon and Mr. Millhone about summarizing their testimony in 5 or 6 minutes. We will put a timer on, and put it, of course, all in the record. And then do the same with the witnesses on the next panel.

I appreciate everybody's cooperation—but we are, as you know, in a frantic time here in the Senate. I have never seen so many people in the corridors, for example. Everybody is just barraged by grateful constituents.

[Laughter.]

Senator WIRTH. Senator Johnston, as you know, has a very ambitious schedule for this piece of legislation. And we are trying—all of us—to meet that schedule.

As we look to an energy policy, I have said, and many in this room have echoed, that the centerpiece of any energy policy must be an aggressive energy efficiency program. And we are here today to hear one of the issues relating to that, building energy standards.

One of the most visible issues, of automobile fuel efficiency, the so-called "Bryan Bill" receives a lot of the attention. But looking underneath it at the whole energy economy of the country, there is enormous consumption in the areas of buildings. And many of us believe that this issue, over the long, hard pull—sort of like the

tortoise—is one in which we can win, maybe, a little more slowly, but in which a great deal of progress can be made.

And that is the purpose of the hearing today. I have a statement which, setting the appropriate example, I will put in the record.

[Prepared statements of Senators Wirth, Wallop and Nickles, and the text of subtitle A of title III follow:]

STATEMENT OF THE HONORABLE TIMOTHY E. WIRTH
HEARINGS ON BUILDING ENERGY STANDARDS
MARCH 19, 1991

Good afternoon. At the outset let me thank all of witnesses for being here today. The issue of building energy efficiency is often obscured by CAFE standards and other high-profile issues. But as one can see from today's witness list, there are a number of private sector interests pushing for greater efficiency in buildings. As in other segments of our economy, energy efficiency can be good business.

Under the aggressive leadership of the Committee's Chairman, we have embarked, at rapid speed, on a series of hearings looking at all of the options available to the nation to create a comprehensive national energy policy. The monumental events of the past six months in the Persian Gulf have underscored once again the imperative that this nation establish a meaningful national energy policy. This is important for reducing oil imports and strengthening our energy security. Energy policy is also important for enhancing our competitive position around the world and for reducing our trade deficit.

But there are other imperatives to energy policy that don't always make headlines or appear on the evening news.

Most importantly, increased energy efficiency must be the

While the threat of global warming is not as troubling to some in Washington, the public is concerned and the potential consequences are sobering.

Today, the Subcommittee on Regulation and Conservation will examine one approach to increasing energy efficiency in the nation's commercial and residential buildings.

Over one-third, or 27 quads, of the nation's energy is used in buildings. Congress has established several programs to make this energy use more efficient -- everything from efficiency standards on building equipment such as furnaces, water heaters and fluorescent light ballasts, to financial grants for schools, hospitals and low-income households to install energy efficiency measures.

In 1976, as Title III of the Energy Conservation and Policy Act, Congress directed the Secretary of Energy to develop and publish building efficiency standards by 1983, and to have them apply to all Federal buildings by 1984. This title also required the Secretary to monitor the activities of the state and local governments in promoting energy efficient buildings and to provide technical assistance.

Today, we will hear from the Department of Energy on the status of those efforts, including -- I hope -- recommendations on how they can be improved.

We will also hear from a panel of experts on their reactions to the building standards provisions of S. 341, introduced by Senator Johnston and Senator Wallop. I might add that I have some ideas on the subject of building efficiency that I will be considering as we look toward markup of an energy bill.

I was interested to learn that the energy efficiency "white paper" done by the national laboratories as part of the National Energy Strategy found that of the potential cost-effective savings through 2010, 41 percent of the savings -- the energy equivalent of 2.5 million barrels of oil per day.

I look forward to your ideas on how building standards can help the nation use that enormous amount of energy in the building sector more efficiently. Any improvements that we can make to this program will help the nation become more secure, more competitive, and will help the environment.

**Statement of Senator Malcolm Wallop (R-WY)
Ranking Republican Member
Senate Committee on Energy and Natural Resources
March 19, 1991**

**Building Energy Efficiency Standards
Provisions of Energy Security Act of 1991**

Today the Energy Regulation and Conservation Subcommittee addresses yet another issue on which we must strike a balance between energy savings and interference in the marketplace. Certainly I have made no secret of my distaste for command and control regulation of markets by the federal government. Circumstances are rare in which it might be appropriate for the federal government to go beyond incentive programs to achieve societal changes. We should have learned our lesson in this area from our experience with Jimmy Carter's mandatory building standards.

Our national goal with respect to building energy efficiency should be to encourage the voluntary development of cost-effective, energy-saving building codes by providing research and technical assistance. Formulation of building codes should be left to state and local jurisdictions for they are best suited to know what is appropriate and workable in their areas.

Federal participation in energy efficiency rating programs as well should never go beyond the development of voluntary guidelines for ratings and incentive programs. It is extremely important that any rating system guidelines remain voluntary. Otherwise, we may be opening up a Pandora's box of market distortions within the real estate and mortgage financing arenas.

This is not to diminish the important role increasing energy efficiency in buildings plays in our overall efforts to conserve our energy resources. With residential and commercial buildings accounting for nearly 35 per cent of our energy use, we should take a close look at ways we can assist in stimulating cost-effective reductions in energy consumption in the buildings sector.

I look forward to hearing today's witnesses.

STATEMENT OF SENATOR DON NICKLES
RANKING REPUBLICAN, SUBCOMMITTEE ON
ENERGY REGULATION AND CONSERVATION

HEARING ON THE BUILDING EFFICIENCY STANDARDS OF S.341
MARCH 19, 1991

Mr. Chairman, I will be brief. Approximately one-third, or 27 quads, of the energy used in the United States is used in residential and commercial buildings. With such a large percentage of energy being expended within buildings, it is important that we do what we can to encourage energy conservation in this arena. However, it is also important that energy efficiency standards be voluntary, not mandatory.

Currently, DOE's standards for commercial buildings are voluntary for the private sector and mandatory for new federal buildings. The provisions of S.341 purport to expand the mandatory application of the DOE's commercial building standards to include public housing and also authorizes the Secretary to provide financial assistance to States and local governments to assist them in adopting or updating energy efficiency standards. As long as these standards remain voluntary in the private sector, I don't have a problem with them.

What does concern me, however, is application of mandatory energy conservation standards to residential buildings. Section 3002 of S.341 provides for DOE's development of voluntary guidelines to be used by local governments should they decide to adopt a system to rate residences according to energy efficiency. I am concerned that this provision could ultimately become the catalyst for mandatory ratings accompanied by enforcement through mortgage lending practices.

What I don't want to see happen is a willing buyer, unable to obtain financing, because the house he wants to buy doesn't meet a certain energy efficiency standard. Such standards could also force sellers, who have owned their home for many years, to make costly energy efficiency investments in their home before they could sell it. Such results could impact severely on retirees trying to sell their family home to move to a smaller home.

As I stated earlier, I don't oppose energy efficiency standards, but I do oppose the use of these standards in a mandatory fashion. Rating systems for residences should be voluntary and encouraged through the use of financing incentives. I look forward to hearing the testimony of the witnesses and any suggestions they may have for implementing voluntary programs.

102D CONGRESS
1ST SESSION

S. 341

To reduce the Nation's dependence on imported oil, to provide for the energy security of the Nation and for other purposes.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 5 (legislative day, JANUARY 8), 1991

Mr. JOHNSTON (for himself and Mr. WALLOP) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

A BILL

To reduce the Nation's dependence on imported oil, to provide for the energy security of the Nation and for other purposes.

- 1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That this Act may be referred to as the "National Energy
4 Security Act of 1991".

* * * * *

12 **TITLE III—ENERGY EFFICIENCY**

13 **Subtitle A—Industrial, Commercial and Residential**

14 **SEC. 3001. BUILDING ENERGY EFFICIENCY STAND-**

15 **ARDS.—Title III of the Energy Conservation and Production**

16 **Act, (48 U.S.C. 6835) is amended by:**

17 (a) In section 304(a)(4), striking the words “Federal
18 buildings” and inserting in lieu thereof, “Federal buildings
19 and public housing,”;

20 (b) Striking the existing section 306 and inserting in lieu
21 thereof the following:

22 **“SEC. 306. COMPLIANCE.**

23 **“(a) FEDERAL BUILDINGS.—The head of each Federal**
24 **agency shall adopt such procedures as may be necessary to**
25 **assure that the construction of any new Federal building**

1 meets or exceeds the applicable energy efficiency perform-
2 ance standards promulgated pursuant to section 304(a).

3 “(b) PUBLIC HOUSING.—Effective three years after the
4 date of the enactment of the National Energy Security Act of
5 1991, the Secretary of Housing and Urban Development
6 shall adopt such procedures as may be necessary to assure
7 that any newly constructed public housing unit meets or ex-
8 ceeds the applicable energy efficiency performance standards
9 promulgated pursuant to section 304(a).”; and

10 (c) Redesignating the existing section 308 as subsection
11 (a) and adding at the end thereof, the following new subsec-
12 tion:

13 “(b) The Secretary may provide financial assistance to
14 the States, and to units of local government that have juris-
15 diction over building energy conservation standards, and
16 which intend to adopt energy conservation standards consist-
17 ent with the standards promulgated under this Part for com-
18 mercial buildings, to assist them in furthering the design and
19 construction of energy efficient commercial buildings.”.

20 (d) CONFORMING AMENDMENT.—Strike section 109 of
21 the Cranston-Gonzalez National Affordable Housing Act
22 (Public Law 101-625) and insert in lieu thereof the follow-
23 ing: “The Secretary of Housing and Urban Development
24 shall, not later than one year after the enactment of the Na-
25 tional Energy Security Act of 1991, adopt the energy conser-

1 vation performance standards for new buildings as promul-
 2 gated by the Secretary of Energy pursuant to section 304 of
 3 the Energy Conservation and Production Act (Public Law
 4 94-385), as amended, for new construction of public and as-
 5 sisted housing and single-family and multifamily residential
 6 housing (other than manufactured homes) subject to mort-
 7 gages under the National Housing Act.”.

8 SEC. 3002. RESIDENTIAL ENERGY EFFICIENCY RAT-
 9 INGS.—(a) AMENDMENT TO NATIONAL ENERGY CONSER-
 10 VATION POLICY ACT.—Title II of the National Energy Con-
 11 servation Policy Act (Public Law 95-619) is hereby amended
 12 by adding a new part 6 as follows:

13 “PART 6—RESIDENTIAL ENERGY EFFICIENCY RATINGS

14 “SEC. 271.—RATINGS.—(a) Within twelve months
 15 after the date of the enactment of the National Energy Secu-
 16 rity Act of 1991, the Secretary, in consultation with the Sec-
 17 retary of Housing and Urban Development, shall, by rule,
 18 promulgate guidelines for procedures to be implemented by
 19 State governments that would enable the assignment of an
 20 energy efficiency rating to residential buildings.

21 “(b) The guidelines under subsection (a) shall—

22 “(1) provide for a numerical rating of the efficien-
 23 cy with which any residential building may be supplied
 24 with heating and cooling energy on an annual basis,

1 and evaluate the practicality of including major energy
2 consuming appliances in such rating;

3 “(2) provide that all residential buildings can re-
4 ceive a rating at the time of sale;

5 “(3) ensure that the rating is prominently commu-
6 nicated to potential buyers and renters;

7 “(4) ensure that the rating system is designed to
8 facilitate its use by lenders and the secondary mort-
9 gage markets to promote energy efficiency; and

10 “(5) ensure that the rating system is consistent
11 with and supports the uniform plan for mortgage fi-
12 nancing incentives required under section 946 of the
13 Cranston-Gonzales National Affordable Housing Act
14 (Public Law 101-625).

15 “SEC. 272.—TECHNICAL ASSISTANCE.—Within
16 twelve months after the date of enactment of the National
17 Energy Security Act of 1991, the Secretary shall establish a
18 program to provide technical assistance for State and local
19 organizations adopting residential energy efficiency rating
20 systems or building codes.”.

21 (b) CONFORMING AMENDMENT.—The National Energy
22 Conservation Policy Act is further amended by adding in the
23 table of contents at the end of title II, the following items:

“PART 6—RESIDENTIAL ENERGY EFFICIENCY RATINGS

“Sec. 271. Ratings.

“Sec. 272. Technical Assistance.”.

1 SEC. 3003. IMPROVING EFFICIENCY IN ENERGY-IN-
2 TENSIVE INDUSTRIES.—(a) SECRETARIAL ACTION.—The
3 Secretary, acting in accordance with authority contained in
4 the Federal Nonnuclear Energy Research and Development
5 Policy Act of 1974 (42 U.S.C. 5901–5920) and other appli-
6 cable laws, shall—

7 (1) pursue a research and development program
8 intended to improve energy efficiency and productivity
9 in energy intensive industries and industrial processes;
10 and

11 (2) undertake joint ventures to encourage the
12 commercialization of technologies developed under
13 paragraph (1).

14 (b) JOINT VENTURES.—(1) The Secretary shall—

15 (A) conduct a competitive solicitation for propos-
16 als from specialized private firms and investors for such
17 joint ventures under subsection (a)(2); and

18 (B) provide financial assistance to at least five
19 such joint ventures.

20 (2) The purpose of the joint ventures shall be to design,
21 test and demonstrate changes to industrial processes that will
22 result in improved energy efficiency and productivity. The
23 joint ventures may also demonstrate other improvements of
24 benefit to such industries so long as demonstration of energy

1 efficiency improvements is the principal objective of the joint
2 venture.

3 (3) In evaluating proposals for financial assistance and
4 joint ventures under this section, the Secretary shall
5 consider—

6 (A) whether the research and development activi-
7 ties conducted under this section improve the quality
8 and energy efficiency of industries or industrial
9 processes;

10 (B) the regional distribution of the energy inten-
11 sive industries and industrial processes; and

12 (C) whether the proposed joint-venture project
13 would be located in the region which has the energy-
14 intensive industry and industrial processes that would
15 benefit from the project.

16 (c) AUTHORIZATION.—There is authorized to be appro-
17 priated to the Secretary \$5,000,000 for fiscal year 1992,
18 \$15,000,000 for fiscal year 1993, and \$25,000,000 for fiscal
19 year 1994, to carry out the purposes of this section.

20 SEC. 3004. REPORT.—(a) REPORT.—The Secretary, in
21 consultation with the Council of Economic Advisors, shall
22 submit to the Congress within one year after the date of the
23 enactment of this Act, and every three years thereafter
24 through the year 2004, a report setting forth energy effi-
25 ciency policy options that would both decrease domestic oil

1 consumption and overall domestic energy consumption by 1,
 2 2, 3, and 4 per centum, per-year per-unit of Gross National
 3 Product, through the year 2005, below the projected con-
 4 sumption for 2005. The Secretary shall evaluate, describe
 5 and rank these policy options according to their cost-effec-
 6 tiveness and their feasibility of implementation.

7 (b) REPEAL.—Title III of the Energy Security Act (42
 8 U.S.C. 7361, et. seq) is hereby repealed.

9 SEC. 3005. VOLUNTARY GUIDELINES FOR INDUSTRI-
 10 AL PLANTS—(a) VOLUNTARY GUIDELINES FOR ENERGY
 11 EFFICIENCY AUDITING AND INSULATING.—Within one year
 12 after the date of the enactment of this Act, the Secretary,
 13 after consultation with utilities, major industrial energy con-
 14 sumers and representatives of the insulation industry, shall
 15 establish voluntary guidelines for:

16 (1) the conduct of energy efficiency audits of in-
 17 dustrial facilities to identify cost-effective opportunities
 18 to increase energy efficiency; and

19 (2) the installation of insulation to achieve cost-
 20 effective increases in energy efficiency in industrial
 21 facilities.

22 (b) EDUCATION AND TECHNICAL ASSISTANCE.—The
 23 Secretary shall conduct a program of education and technical
 24 assistance to promote the use of the voluntary guidelines es-
 25 tablished under subsection (a).

1 (c) ANNUAL REPORT.—The Secretary shall report an-
2 nually on activities conducted pursuant to this section, in-
3 cluding an evaluation of the effectiveness of these guidelines,
4 and the responsiveness of the industrial sector to these
5 guidelines.

6 (d) AUTHORIZATION.—There is authorized to be appro-
7 priated \$750,000 annually to carry out the purposes of this
8 section.

9 SEC. 3006. ENERGY EFFICIENCY LABELING FOR WIN-
10 DOWS AND WINDOW SYSTEMS.—(a) DEVELOPMENT OF
11 PROGRAM.—Not later than one year after the date of enact-
12 ment of this Act, the Secretary shall, in consultation with the
13 National Fenestration Rating Council, industry representa-
14 tives, and other appropriate organizations, provide financial
15 and technical assistance to support the voluntary develop-
16 ment of a national window rating program to establish
17 energy efficiency ratings for windows and window systems.
18 Such program shall set forth information and specifications
19 that will enable purchasers of windows or window systems to
20 make more informed purchasing decisions based upon the po-
21 tential cost and energy savings of alternative window
22 products.

23 (b) SECRETARIAL ACTION.—If a national window
24 rating program, consistent with the objectives of subsection
25 (a), is not established within two years of the date of enact-

1 ment of this Act, then the Secretary shall, in consultation
2 with the National Institute of Standards and Technology, de-
3 velop, within one year, a rating program to establish energy
4 efficiency ratings for windows and window systems under
5 section 323 of the Energy Policy and Conservation Act (42
6 U.S.C. 6293).

7 (c) **FEDERAL TRADE COMMISSION RULES.**—The Fed-
8 eral Trade Commission (hereinafter in this section, the
9 “Commission”) shall prescribe labeling rules under section
10 324 of the Energy Policy and Conservation Act (42 U.S.C.
11 6294) for the rating program established pursuant to either
12 subsection (a) or (b) of this section, unless the Commission
13 determines that labeling in accordance with subsections (a) or
14 (b) of this section is not technologically or economically feasi-
15 ble or is not likely to assist consumers in making purchasing
16 decisions with respect to any type of window or window
17 system (or class thereof).

18 (d) **COVERED PRODUCTS.**—For purposes of sections
19 323 and 324 of the Energy Policy and Conservation Act,
20 windows and window systems shall be considered covered
21 products under section 322 of such Act (42 U.S.C. 6292)
22 unless excluded by the Commission pursuant to subsection
23 (c).

24 (e) **AUTHORIZATION.**—There is authorized to be appro-
25 priated to the Secretary \$750,000 for each of the fiscal years

1 1992, 1993, and 1994 to carry out the purposes of this
2 section.

3 SEC. 3007. ENERGY EFFICIENCY INFORMATION.—(a)
4 DATA ON ENERGY EFFICIENCY.—Pursuant to Section 52(a)
5 of the Federal Energy Administration Act of 1974, (Public
6 Law 93–275) and after consultation with State and Federal
7 energy officials, representatives of energy using classes and
8 sectors, and representatives of energy policy public-interest
9 or research organizations, the Administrator of the Energy
10 Information Administration shall expand the scope and fre-
11 quency of the data it collects and reports on energy use in the
12 United States with the objective of significantly improving
13 the ability to evaluate the effectiveness of the Nation's
14 energy efficiency policies and programs. The Administrator
15 shall take into account reporting burdens and the protection
16 of proprietary information as required by law. In expanding
17 the collection of such data to meet this objective, the Admin-
18 istrator shall consider—

19 (1) expanding data collection to include energy in-
20 tensive sectors not presently covered in Energy Infor-
21 mation Administration surveys;

22 (2) increasing the frequency with which the
23 Energy Information Administration conducts end-use
24 energy surveys among households, commercial build-
25 ings, and manufacturing;

1 (3) expanding the survey instruments to include
2 questions regarding participation in government and
3 utility conservation programs, the energy efficiency of
4 existing stocks of equipment and structures, and recent
5 changes in the technical efficiency and operating prac-
6 tices that affect energy use;

7 (4) expanding the time period for which fuel-use
8 data is collected from individual survey respondents;

9 (5) expanding the sample sizes for fuel-use sur-
10 veys in order to improve the accuracy of subgroups of
11 energy users; and

12 (6) expanding the scope and frequency of data col-
13 lection on the energy efficiency and load-management
14 programs operated by electric and gas utilities.

15 (b) ANNUAL REPORT.—The Administrator shall report
16 annually to Congress on the energy efficiency in classes and
17 sectors of the economy and on any data resulting from this
18 section.

19 SEC. 3008. ENERGY EFFICIENCY LABELING FOR
20 LAMPS AND LUMINAIRES.—(a) DEVELOPMENT OF PRO-
21 GRAM.—Not later than one year after the date of enactment
22 of this Act, and in consultation with the National Electric
23 Manufacturers Association, industry representatives, and
24 other appropriate organizations, the Secretary shall provide
25 financial and technical assistance to support the voluntary

1 development of a national energy efficiency rating program
2 for lamps and luminaries. Such program shall set forth infor-
3 mation and specifications that will enable purchasers of lamps
4 and luminaries to make informed decisions among the energy
5 efficiency and cost of alternative lamps and luminaries.

6 (b) SECRETARIAL ACTION.—If a national energy effi-
7 ciency rating and labeling program consistent with the objec-
8 tives of subsection (a) is not voluntarily established within
9 two years of the date of enactment of this Act, then the Sec-
10 retary shall, in consultation with the National Institute of
11 Standards and Technology, develop, within one year, a
12 rating program for lamps and luminaries under section 323 of
13 the Energy Policy and Conservation Act (42 U.S.C. 6293).

14 (c) FEDERAL TRADE COMMISSION RULES.—The Fed-
15 eral Trade Commission (hereinafter in this section, the
16 “Commission”) shall prescribe labeling rules under section
17 324 of the Energy Policy and Conservation Act (42 U.S.C.
18 6294) for lamps and luminaries, except to the extent that the
19 Commission determines that labeling in accordance with sub-
20 section (b) of this section is not technologically or economical-
21 ly feasible or is not likely to assist consumers in making pur-
22 chasing decisions with respect to any type of lamp or lumi-
23 narie (or class thereof).

24 (d) COVERED PRODUCTS.—For purposes of sections
25 323 and 324 of the Energy Policy and Conservation Act,

1 lamps and luminaries shall be considered covered products
 2 under section 322 of such Act (42 U.S.C. 6292) unless ex-
 3 cluded by the Commission pursuant to subsection (c).

4 (e) AUTHORIZATION.—There is authorized to be appro-
 5 priated to the Secretary \$750,000 for each of the fiscal years
 6 1992, 1993, and 1994 to carry out the purposes of this sec-
 7 tion.

8 SEC. 3009.—COMMERCIAL AND INDUSTRIAL EQUIP-
 9 MENT EFFICIENCY STANDARDS.—(a) DEFINITIONS.—Sec-
 10 tion 340(2)(B) of title III part C of the Energy Policy and
 11 Conservation Act (42 U.S.C. 6311) is hereby amended:

12 (1) by deleting “and” at the end of clause (xiii),
 13 replacing the period at the end of clause (xiv) with “;
 14 and”, and inserting the following new clause:

15 “ (xv) utility distribution transformers.”.

16 (b) TECHNICAL AMENDMENT.—Section 342(b)(1) of
 17 title III, part C of the Energy Policy and Conservation Act
 18 (42 U.S.C. 6313) is hereby amended by deleting “(other than
 19 electric motors or pumps)” and inserting in lieu thereof the
 20 following: “, other than electric motors or pumps, electric
 21 lights, and utility distribution transformers,”.

22 (c) STUDY.—Section 342 of title, III part C of the
 23 Energy Policy and Conservation Act (42 U.S.C. 6313) is
 24 hereby amended:

1 (1) by redesignating paragraph (b) as amended, as
2 paragraph (c) and inserting a new paragraph (b) to
3 read as follows:

4 “(b) Not later than eighteen months after the date of the
5 enactment of the National Energy Security Act of 1991, the
6 Secretary shall—

7 “(1) evaluate electric lights and utility distribution
8 transformers to—

9 “(A) determine standard classifications with
10 respect to size, function, type of energy used,
11 method of manufacture, or other factors which
12 may be appropriate for purposes of this part;

13 “(B) determine the practicability and effects
14 of requiring all or part of the classes of electric
15 lights and utility distribution transformers deter-
16 mined under subparagraph (A) to meet perform-
17 ance standards establishing minimum levels of
18 energy efficiency; and

19 “(C) determine the practicability and cost-ef-
20 fectiveness and potential energy savings of replac-
21 ing existing utility distribution transformers.

22 “(2) submit a report to the Congress on the re-
23 sults of such evaluation, together with such recommen-
24 dations for legislation as he considers appropriate.”.

1 (d) REEVALUATION OF ELECTRIC MOTORS AND
2 PUMPS.—Pursuant to section 342 of title III part C of the
3 Energy Policy and Conservation Act (42 U.S.C. 6313), the
4 Secretary shall—

5 (1) conduct a reevaluation of electric motors and
6 pumps to determine the practicability and effects of re-
7 quiring all or part of the classes of electric motors and
8 pumps determined under subparagraph (A) of section
9 342(a)(1) of the Energy Policy and Conservation Act
10 to meet performance standards establishing minimum
11 levels of energy efficiency; and

12 (2) submit a report to Congress on the results of
13 such evaluation, together with such recommendations
14 for legislation as he considers appropriate. The report
15 under this subsection may include the report pursuant
16 to section 342(b)(2) of the Energy Policy and Conser-
17 vation Act.

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Senator WIRTH. Why not move right to you, Mr. Detchon. Thank you very much for being here.

STATEMENT OF B. REID DETCHON, PRINCIPAL DEPUTY ASSISTANT SECRETARY, CONSERVATION AND RENEWABLE ENERGY, DEPARTMENT OF ENERGY, ACCOMPANIED BY JOHN P. MILLHONE, DEPUTY ASSISTANT SECRETARY FOR BUILDING TECHNOLOGY

Mr. DETCHON. Thank you, Mr. Chairman.

I am pleased to have the opportunity to present the Department of Energy's views on S. 341, with particular reference to section 3001, concerning building energy efficiency standards. My full statement includes comments on section 3002, but to abbreviate, I will omit those at this time.

Greater energy efficiency can reduce energy cost to consumers, enhance environmental quality, maintain and enhance our standard of living, increase our energy security, and promote a strong economy.

In residential and commercial building the National Energy Strategy seeks to maintain or enhance comfort, indoor air quality and affordability, while reducing energy use.

Section 3001 would extend the application of Federal building standards to public and assisted housing, and to residential housing—other than manufactured homes, subject to mortgages under the National Housing Act—by modifying provisions of title III of the Energy Conservation and Production Act. This is consistent with the National Energy Strategy's objective of increasing the efficiency of all federally assisted new buildings.

We plan to work under existing authority in the National Affordable Housing Act of last year with the Department of Housing and Urban Development, and other Federal agencies, to strengthen the energy-efficiency standards for all federally assisted new housing, including manufactured housing and residential housing subject to mortgages under the National Housing Act.

Indeed, the National Energy Strategy supports extending that reach to including housing financed with loans guaranteed by the Veterans Administration and the Farmers Home Administration.

However, as drafted, we believe that S. 341 is somewhat overly aggressive in requiring compliance with DOE's energy conservation performance standards within just 1-year of enactment.

ECPA requires DOE to establish energy efficiency standards for commercial buildings and residential buildings. The standards are voluntary, except in the construction of Federal buildings. ECPA—and I would say, in my written statement it says EPCA, but ECPA, in this case—also requires each Federal agency responsible for the construction of any Federal building to adopt procedures to assure that such construction meets or exceeds the applicable standard.

In accordance with the requirements of ECPA, we have issued interim performance standards for the construction of commercial buildings and Federal residential buildings. We are currently preparing proposed guidelines for the construction of non-Federal, residential buildings. The proposed interim performance standards are expected to be published in the Federal Register in June.

After we review the comments received on the proposed guidelines, final interim performance standards will be published. A demonstration period of approximately 18 months will follow before a final rule is issued.

Because we are in this period of gestation and demonstration of the standards, we recommend that the requirement to meet the DOE standards not take effect until 1 year after promulgation of final performance standards. In the meantime the existing language in section 109 of the National Affordable Housing Act could be left in tact.

These DOE standards have been developed in collaboration with ASHRAE and other industry and professional groups. We believe that they provide a basis for State and local governments to incorporate energy requirements into their own building codes.

I would note, though, that the success of the standards will depend on the degree to which they are implemented and enforced at the local level. Accordingly, we have proposed in our fiscal year 1992 budget request an aggressive program to inform architects, engineers and State and local code officials about the standards.

We plan to aggressively encourage their adoption by State and local governments who have authority to impose such standards through their building codes. A substantial increase in the energy efficiency of new buildings is possible. The standards are estimated to require designs that would achieve energy savings over current design practices of 20 percent to 25 percent.

In addition, we plan to accelerate the adoption of the standards through a Nation-wide identification of high value, energy-efficient buildings. We would initiate this activity in cooperation with industry and professional groups. Architects and builders planning new commercial buildings would be invited to compete for support for highly efficient designs.

The DOE funds would be used to review the designs, estimate the energy performance of the buildings, and monitor their performance after construction. DOE would provide no construction costs.

The winning buildings would receive presentation plaques identifying them as winners, and showing their design energy use, compared with the average energy use for other new buildings. In this way, DOE standards would be highly visible and highly leveraged.

In general, Mr. Chairman, section 3001 is consistent with the direction of the National Energy Strategy. It would make a useful contribution to the adoption and wider use of energy-efficient building techniques.

We look forward to working with the committee further to refine the few points of concerns that we have.

I want to conclude my testimony by noting that DOE is just one player in this effort. We can develop standards and guidelines. But we recognize that success will depend on how those standards and guidelines are implemented by States and local governments, with support from utilities, home-builders, real estate agents, bankers, and conservation and environmental organizations.

We are determined to be a strong player, but we will need a team effort. I appreciate your having this hearing, and I would be pleased to answer any questions.

[The prepared statement of Mr. Detchon follows:]

Statement of B. Reid Detchon
Principal Deputy Assistant Secretary
Conservation and Renewable Energy
U.S. Department of Energy

Committee on Energy and Natural Resources
Subcommittee on Energy Regulation and Conservation
United States Senate

Tuesday, March 19, 1991

Mr. Chairman and members of the Committee, I am pleased to have the opportunity to present the Department of Energy's views on S. 341, the National Energy Security Act of 1991, with particular reference to sections 3001 and 3002, concerning building energy efficiency standards and residential energy efficiency ratings.

Greater energy efficiency can reduce energy costs to consumers, enhance environmental quality, maintain and enhance our standard of living, increase our energy security, and promote a strong economy. In residential and commercial buildings, the National Energy Strategy seeks to maintain or enhance comfort, indoor air quality, and affordability while reducing energy use.

Sec. 3001, Building Energy Efficiency Standards, would extend the application of Federal building standards to public and assisted housing and to residential housing (other than manufactured homes) subject to mortgages under the National Housing Act by modifying provisions of Title III of the Energy Conservation and Production Act (42 U.S.C. 6831 et seq.) (ECPA). This is consistent with the National Energy Strategy's objective of increasing the efficiency of all Federally assisted new buildings.

We plan to work under existing authority with the Department of Housing and Urban Development (HUD) and other Federal agencies to strengthen the energy-efficiency standards for all Federally assisted new housing, including manufactured housing and residential housing subject to mortgages under the National Housing Act. Indeed, the National Energy Strategy supports extending that reach to include housing financed with loans guaranteed by the Veterans Administration and Farmers Home Administration. However, as drafted, S. 341 is overly aggressive in requiring compliance with DOE's energy conservation performance standards within one year of enactment.

ECPA requires DOE to establish energy efficiency standards for commercial buildings and residential buildings. The standards are voluntary standards, except in the construction of Federal buildings. EPCA also requires each Federal agency responsible for the construction of any Federal building to adopt procedures to assure that such construction meets or exceeds the applicable standard. In accordance with the requirements of ECPA, we have issued interim performance standards for the construction of commercial buildings and Federal residential buildings. We are currently preparing proposed guidelines for the construction of non-Federal residential buildings. The proposed interim performance standards are expected to be published in the Federal Register in June. After we review the comments received on the proposed guidelines, final interim performance standards will be published. A demonstration period of approximately 18 months will follow before a final rule is issued.

Because we are in this period of gestation and demonstration of the standards,

we recommend that the requirement to meet the DOE standards not take effect until one year after promulgation of final performance standards. In the meantime, the existing language in section 109 of the National Affordable Housing Act could be left intact.

The DOE standards have been developed in collaboration with the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) and industry and professional groups. We believe that the standards provide a basis for State and local governments to incorporate energy requirements into their own building codes. The success of the standards will depend on the degree to which they are implemented and enforced at the local level. Accordingly, we have proposed in our Fiscal Year 1992 budget request an aggressive program to inform architects and engineers and State and local code officials about the standards. We plan to aggressively encourage their adoption by State and local governments who have authority to impose such standards through their building codes. A substantial increase in the energy efficiency of new buildings is possible; the standards are estimated to require designs that would achieve energy savings over current design practices of 20-25 percent.

In addition, we plan to accelerate the adoption of the standards through a nationwide identification of "High Value, Energy-Efficient Buildings." We would initiate this activity in cooperation with industry and professional groups. Architects and builders planning new commercial buildings would be invited to compete for support for highly efficient designs. The DOE funds would be used to review the designs, estimate the energy performance of the

buildings, and monitor their performance after construction. DOE would provide no construction costs. The winning buildings would receive presentation plaques, identifying them as winners and showing their design energy use compared with the average energy use for other new buildings. In this way, DOE's standards would be highly visible and highly leveraged.

Section 3001 authorizes the Secretary of Energy to provide financial assistance to the States and local governments which intend to conform their building codes to the Federal standards, to assist them in furthering the design and construction of energy-efficient commercial buildings. This is generally consistent with the National Energy Strategy's intent to make Federal technical and financial assistance available to help State and local governments, as well as industry and building-code organizations, update their energy efficiency code provisions and ensure cost-effective compliance, but should not be aimed at supporting private-sector construction projects.

Sec. 3002, Residential Energy Efficiency Ratings, would direct the Secretary of Energy, in consultation with the Secretary of HUD, to promulgate guidelines for State governments to use in assigning energy efficiency ratings to residential buildings. The guidelines are to provide a numerical rating of energy efficiency, provide that all residential buildings can receive a rating at the time of sale, and ensure that the rating is prominently communicated to potential buyers and renters. The guidelines are to be consistent with the uniform plan for energy-efficient mortgages developed by HUD under the National Affordable Housing Act of 1990.

We strongly support these activities. Legislative language on this topic was omitted from S. 570, the National Energy Strategy Act, only because we are already proceeding with a similar program under existing authority. The National Energy Strategy recommends Federal support for voluntary adoption of such rating systems, but goes even further by recommending that after at least five years of support for such voluntary adoption, information on energy efficiency and information on the available mortgage financing options be required to be provided to home buyers prior to sale.

The use of guidelines will allow for the continuation of those rating systems that already exist, providing they meet the criteria. In this, the approach is superior to requiring a single, uniform rating system. At the same time, the guidelines will encourage the national promotion and advertising needed to get homebuyers and renters to look for and demand this consumer information. The linkage between rating systems and energy efficient mortgages will help increase housing affordability. By creating more informed buyers and renters, the program also will improve the operation of the market system.

We have already initiated a national collaborative process to reach a consensus on residential energy efficiency ratings. We have tried to identify all the interested parties, including the secondary mortgage institutions, real estate agents, homebuilders, the States, and energy conservation organizations. They have been invited to a meeting later this month to begin a collaborative process that will seek to reach agreement on the criteria and program for home efficiency ratings by the end of this calendar year.

In general, Mr. Chairman, sections 3001 and 3002 are consistent with the direction of the National Energy Strategy and would make useful contributions to the adoption and wider use of energy-efficient building techniques. We look forward to working with the Committee further to refine the few points of concern that we have.

I want to conclude my testimony by noting that DOE is just one player in this effort. We can develop standards and guidelines. But we recognize that success of this area will depend on how those standards and guidelines are implemented by States and local governments, with support from utilities, homebuilders, real estate agents, bankers, and conservation and environmental organizations. We are determined to be a strong player, but we will need a team effort.

I appreciate your time and attention, and I would be pleased at this time to answer any questions that you may have. Thank you very much.

Senator WIRTH. Mr. Detchon, thank you very much. We appreciate your being here. Let me just ask you a procedural question as well. I do not know what your time is like. If you have to go, do so, and we will do questions right now. Otherwise, we had three—we have a number of other witnesses, actually. And I was going to ask if you might want to hear any of their response to questions, or whatever, before you have to leave?

Mr. DETCHON. I am at your disposal, Mr. Chairman.

Senator WIRTH. Well, why do we not do this? Why do we not get the other witnesses to join us. Would that be all right, if we did that? Why do we not get the other six witnesses to join us and run through their testimony. What I would really—and while they are up here, let me describe what I think we want to try to get at, if we could do that.

Would that be all right? I would appreciate that very much.

Why do we not ask our other six witnesses to join us, if we could do that.

Mr. DETCHON. Should we stand down and join you later?

Senator WIRTH. Or, you could just pull another chair up.

The panel witnesses—and I really appreciate that, Mr. Detchon, but I would like to get a discussion going, if I could.

Mr. Bill Prindle, senior program manager for the Alliance to Save Energy; Mr. David Conover, technical services director of the Conference of States; Mr. Larry Lach, director of government and association marketing for the Building Products Group; Mr. Bill Jelin, president of NRG Barriers, Inc.; Mr. Jay Buchert, first vice president of the National Association of Home Builders; and Mr. Richard Kuchnicki, president of the Council of American Building Officials.

Gentlemen, we will, of course, include your statements in full in the record. And if we procedurally might go ahead, as Mr. Detchon set a very fine standard.

Mr. Prindle, why do you not get us going, and let us see if you all can summarize. And let me frame, however, first. It seems to me the progression of issues that we want to look at here is one, what standards are we pursuing?

Should the DOE continue to be promulgating standards, or should we be going to the industry consensus standards—which I understand are significantly ahead of where the DOE is?

Once deciding on a standard, how do we get those standards adopted by the various agencies, States, and so on? And then third, once we get them adopted, how do you get them enforced?

And it seems to me there is a progression. And we have to go through all of those hoops. If I am not mistaken on that, we have to go through all of those hoops before we can start saving any energy coming out the pipeline at the other end, or not coming out the pipeline at the other end.

So, if that is the right progression, Mr. Prindle, why do you not start?

**STATEMENT OF WILLIAM R. PRINDLE, SENIOR PROGRAM
MANAGER, THE ALLIANCE TO SAVE ENERGY**

Mr. PRINDLE. Thank you for those context-setting remarks.

I have offered my written testimony for the record. And I will just summarize here.

We believe that the National Energy Security Act represents an historic opportunity to increase the energy efficiency of our Nation's building stock for many generations. It can help to fill a vacuum that now exists in the building energy standards arena.

Beyond the unfortunate fact that building codes vary widely from State-to-State and city-to-city, there is a vacuum in the transfer of building energy standards in to State and local codes. The ideal concept in which the Federal agencies and the research and engineering communities produce energy standards that code officials then tuck neatly into their codes is not being realized at the present time.

This vacuum really stems from the repeal of the Building Energy Performance Standards, or the BEPS program, early in the 1980's. Created by the energy legislation of the 1970's, BEPS was a potential revolution in building standards. Yet, since it died legislatively in the early 1980's, nothing has really filled the hole that BEPS left.

The Department of Energy and other agencies have continued their building standards research, although at greatly reduced funding levels. ASHRAE, which is the leading engineering society is undertaking a lengthy process to re-think the 1970's era standard, such as 90.75 and 98.80, which are on the books now. And third—but certainly not least—the code official community has created the Council of American Building Officials—which is here today—and its model energy code process, as vehicles for transferring these advanced standards research products into the code documents and into the marketplace.

Yet, as we see it, there is no sensible coordination system that now operates in a real sense. So what we have is Federal research, we have engineering society standards, and then we have private sector and code official processes operating on somewhat different tracks.

We think this is unnecessary and it is confusing to the local code official who has to figure out what to do about this issue.

We recommend that S. 341 clarify this confusion, by declaring the CABO model energy code process to be the official vehicle for transferring advanced energy standards into State and local building codes.

Now in making this recommendation, we make a clear distinction between the process that the Model Energy Code represents and the technical standards which it embodies.

What we suggest is that the MEC is the right institutional vehicle for transferring energy standards into the marketplace. But this does not mean that we reject the technical standards work that is under way at ASHRAE, or the DOE has done over the last decade.

On the contrary—we welcome them, and we invite them to be active players in the MEC process. For while the MEC process is designed to be a standing institution, its technical standards continue to evolve.

We are working to incorporate advances in the state-of-the-art into the MEC. And we invite everyone else to follow along and do the same.

And we have three, specific recommendations for the bill, pertaining to section 3001. One is that the language that is in the section now should be changed to reference the Model Energy Code, for the reasons I have just cited.

We also recommend that the bill be strengthened to require States to upgrade their existing building codes. And I will explain why in a minute.

And the third requirement is to expand the mission of the Department of Energy's charge in section 3001. DOE is asked to provide technical assistance. However, we think that this should be coordinated with a State code upgrade requirement, and that it should be done in concert with the Model Energy Code process—so as not to create two or three parallel and confusing sources of technical assistance to code officials.

We are recommending that States be required to upgrade their codes. This is largely because we are now completing a major study of the Model Energy Code in relation to the current State residential codes on the books now.

We find in our preliminary analysis that 34 States would benefit from an upgrade to energy efficiency standards equivalent to those in the MEC. If this were achieved, each crop of new homes built in these States would save on the order of 8 trillion BTU's, and avoid more than 0.5 million tons of air pollutants.

Our study shows that the MEC is very cost effective in these 34 States. Benefits outweigh costs by more than 3 to 1. In a typical case, mortgage payments on these homes would go up slightly. But energy bills would drop by a larger amount. Thus, these homes would be more affordable as well as more efficient.

The results do vary from State to State. A few examples: in Louisiana—a State that is dear to the heart of this committee—benefits outweigh costs by almost 9 to 1; in Maine, Oklahoma, New Mexico, the ratio is about 5 to 1, benefit to cost; in Kentucky, West Virginia, and Colorado, the score is about 3 to 1. So this is a winner in virtually all the States that we have examined.

It is important for State and local codes to get upgraded now, rather than waiting for the marketplace to sort itself out in a haphazard fashion. Each year that goes by with out-dated codes is a lost opportunity. It is on the order of 1 million homes a year. Each of those crops of homes is costing us 8 trillion BTU's in energy savings, and is adding 0.5 million tons of sulphur dioxide and carbon dioxide and other pollutants to the atmosphere.

There is no reason why we need to wait to solve these problems. And I think our study supports that.

The other point is that the energy features that are cost effective to build into these homes at construction, are a lot more expensive to add later on. So, for these reasons, we urge the committee to recognize the Model Energy Code as the vehicle of record for building energy codes, and to help spread its use in State and local jurisdictions as quickly as possible.

Thank you.

[The prepared statement of Mr. Prindle follows:]

Testimony of

William R. Prindle
Senior Program Manager
The Alliance to Save Energy

on Building Energy Standards Provisions of S.341
The National Energy Security Act of 1991

before the Committee on Energy and Natural Resources
United States Senate

March 19, 1991

I appreciate the Committee's invitation to testify on building energy standards provisions of S.341, the National Energy Security Act of 1991. My testimony outlines the problems we see in the current national picture for building energy codes, and makes specific recommendations for how this bill can help remedy these problems.

The Alliance to Save Energy is a nonprofit coalition of business, government, consumer, labor, and environmental leaders dedicated to increasing the efficiency of energy use. In pursuit of this mission the Alliance conducts research, pilot projects, public education and policy advocacy.

The Alliance has been actively involved in building energy efficiency since its formation in 1977. We view codes and standards as the foundation for energy efficiency in buildings. They define basic levels of energy efficiency in building components and systems to preclude the worst forms of energy waste in our building infrastructure. While advances in the state of the art go beyond the requirements in codes and standards, these regulations are an essential "floor" for energy efficiency.

To summarize our testimony, we see that confusion reigns among state and local code officials as to the appropriate energy standards they should reference in building codes, and how these codes should be applied and enforced. We believe that the Model Energy Code of the Council of American Building Officials is the best vehicle for clarifying this confusion. We recommend that the state of the art in building standards as advanced by federal research at the Department of Energy, and professional and technical societies such as the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), be incorporated in the Model Energy Code process in an ongoing,

consensus-oriented manner. This is already happening to a limited extent, and should be expanded into a regular and comprehensive process.

For S. 341, we recommend that the Model Energy Code be used as the benchmark for federal housing programs, and that states should be required to upgrade their energy-related building codes for residential and commercial buildings to be at least as stringent as those in the Model Energy Code. We also recommend that the Department of Energy, in cooperation with the MEC process and private sector groups like ASHRAE, be charged with assisting states in meeting this requirement through an adequately-funded technical assistance program.

Building Energy Standards from the 1970s to the 1990s

During the 1970s the building standards community responded to the exigencies of the first energy crisis by creating new energy standards for buildings such as ASHRAE 90-75 and ASHRAE 90-A80. The national energy policy legislation of the late 1970s called for the establishment of national Building Energy Performance Standards (BEPS). BEPS was to be a new wave in building energy standards; based on building energy performance rather than a fixed set prescriptive measures, BEPS promised to give building designers new freedom to meet the challenge of creating more-efficient buildings.

However, in the 1980s the BEPS process fell apart. Widespread opposition in the Reagan Administration, the building industry, and code official organizations resulted in its repeal. This campaign revolved around complaints from builders, equipment and component manufacturers and code officials that the computer-based BEPS was too complex to use in the real world. In our view, BEPS died not because of bad research but because there was no practical way to transfer research to the real world.

Fortunately, the Department of Energy, ASHRAE, and others carried on the valuable research and development that began with BEPS. The federal effort has created energy standards that are mandatory for federal buildings and voluntary for the private sector. ASHRAE has produced a new standard for commercial buildings and will soon issue its new standard for residential buildings. Also during this period, the Council of American Building Officials (CABO) developed its Model Energy Code (MEC).

While the 1980s saw advances in technical standards for building energy efficiency, there was a serious lag in the practical means of putting these standards to use in the marketplace. When BEPS fell apart, it left a vacuum with regard to the transfer of building energy standards into state and local codes. The CABO MEC process can be seen as an attempt to fill this vacuum. As a consensus process administered by code officials, the MEC has the potential to be an effective vehicle for transferring

state-of-the-art energy standards to state and local building codes.

The legacy of the 1980s is one of divergence in building energy standards and model codes. Among the unfortunate effects of this legacy are two key facts:

- o Many code officials and builders feel confused about the state of the art in building energy standards because of this divergence. They don't know who to believe, and many find the state of the art too complicated to use in their day-to-day work.
- o Many states and localities have not upgraded their building energy codes for several years. The Alliance's recent study (described below) indicates that two-thirds of the states could justify more stringent energy codes.

This confusion in building codes means that majority of the building stock being built in this country is less efficient and less affordable overall than it could be. Perhaps the most tragic aspect of this is that these buildings will be much more expensive to retrofit than to have been built for energy efficiency in the first place.

The Model Energy Code as a Filter for State of the Art Building Energy Standards

The 1980s have left a wide gap between the daily practice of code officials and builders, and the state of the art in building standards. The federal research generated by and since the BEPS program, plus the advances in ASHRAE and other professional forums, contain enormous potential for improving the efficiency and quality of our building infrastructure. Yet much if not most of this progress is not being applied in the field. The nation needs a better mechanism for the transfer of advanced building energy standards to the real world of the code official and the builder. Code officials need concrete, simple references for determining whether a set of building plans complies with code requirements. Perhaps more importantly, code professionals need training in the detailed practice of inspecting construction practices for code enforcement at the building site.

We believe the Model Energy Code and the process it embodies is the right filter for getting energy standards to code officials in practical forms. The MEC and its parent organization CABO were created to be the consensus forum for the four major code official bodies -- The National Conference of States on Building Codes and Standards (NCSBCS), Building Officials and Code Administrators International (BOCA), the International Council of Building Officials (ICBO), and the Southern Building Codes Congress International (SBCCI). Two delegates from each

organization sit on the MEC Committee. The MEC process has emerged as the most logical and practical way to reach code officials across the nation on energy matters.

It is important to distinguish between the MEC process and the MEC's technical standards. The MEC committee and its deliberations are a permanent structure designed to maintain and amend the MEC over time. The MEC's technical content, however, has changed over time and continues to evolve. Each year the MEC committee considers changes to the technical standards. When we endorse the MEC as the consensus vehicle for building energy codes, we speak of the process itself. While we support the current technical standards of the MEC as generally cost-effective, we are expanding our work with CABO as well as standards-developing bodies like ASHRAE to identify cost-effective improvements to the MEC standards.

Our recommendation of the CABO MEC process as the vehicle for transferring building energy standards to the marketplace does not diminish the importance of the research and standards development progress made in the Department of Energy, ASHRAE, or other forums. We do not reject the technical standards emerging from DOE or ASHRAE in favor of the specific criteria in the current version of the MEC. We simply recommend that DOE, ASHRAE and other energy standards efforts be coordinated through the MEC process, so that code officials see a unified and simplified picture of the state of the art in building standards.

This kind of commonsense coordination has already begun. The most recent foundation insulation criteria proposed through the MEC process were developed in DOE-supported research. The MEC has adopted the most recent ASHRAE standard (90.1) for commercial buildings. The Alliance staff is expanding its work with the MEC process as well as ASHRAE's technical committees, other standards organizations, and the Department of Energy to promote greater coordination and dissemination of advanced energy standards. We ask that the Congress as well as the research community, the building industry, and code officials recognize the MEC process as the logical forum for transferring energy standards advancements into state and local building codes.

Making the MEC process the primary filter for building energy standards will improve the credibility and rigor of the MEC. It will serve the technology transfer goals of DOE and ASHRAE. It will make life much easier for code officials struggling to make sense of building energy standards. It will speed the diffusion of the state of the art in building energy performance into the marketplace. Most importantly, it will mean better, more efficient, and more affordable buildings for generations to come.

Recommendations for S. 341

We recommend that:

1. Section 3001 be amended to reference the Model Energy Code with respect to federally-assisted housing;
 2. States be required to upgrade their energy-related building codes for both residential and commercial buildings to meet or exceed the then-current version of the Model Energy Code, and
 3. The Department of Energy, in cooperation with private-sector organizations, be charged with providing technical assistance through the MEC process to states and code officials for these code upgrades.
1. **Reference the Model Energy Code with respect to Federally-Assisted Housing** -- Section 3001 currently would change the requirement set forth in Section 109 of the Cranston-Gonzales National Affordable Housing Act (42 USC 12709) to reflect a new energy efficiency standard to be promulgated by the Department of Energy. For reasons described above, we recommend that this language be deleted, and substitute language inserted to expand the coverage of the Model Energy Code from HUD-assisted housing to all federally-assisted housing.
2. **Require States to Upgrade Building Codes** -- We also recommend that the section be expanded to include a requirement for states to upgrade their energy-related building codes for both residential and commercial buildings within a reasonable time frame. The then-current version of the Model Energy Code should be the benchmark for this requirement.

While many states have upgraded their codes, a study we are currently completing shows that about two-thirds currently have codes that do not reflect state-of-the-art energy standards. This requirement is necessary to accelerate the rate of adoption of up-to-date building energy standards, and to reinforce the Model Energy Code as the central vehicle for transferring energy standards to the building code community.

We are confident that this requirement is not a burden to the states. It will in fact help them simplify a heretofore confusing situation regarding energy codes. Our study, which is nearing completion, shows significant benefits to the nation. Our preliminary findings indicate that benefits outweigh costs by more than four to one. The average single-family home would cost an additional \$1400 to build, but would still cost \$2600 less than less-efficient housing when energy cost reductions are included. In a typical case, the added cost would increase mortgage payments slightly, but this increase would be more than offset by reduced energy bills.

We project that applying the Model Energy Code in the two-thirds of states that can benefit from it would save 8 trillion BTU annually. These energy savings also translate into pollution reduction -- more than 500,000 tons of carbon dioxide and 5000 tons of sulphur dioxide each year.

Our study shows that 34 states can benefit right now from adopting the MEC's technical standards. For example, in Louisiana, benefits outweigh costs by nearly nine-to-one; in Maine, Oklahoma and New Mexico by five to one; in Kentucky, West Virginia and Colorado, by three to one.

The savings will grow with each year's crop of new homes. On the other hand, each year that goes by without the use of modern energy codes represents a lost opportunity on the order of a million homes. It will never be as easy or as cost-effective to retrofit those homes to an MEC-equivalent level of efficiency. Thus we must encourage the states to act as quickly as possible. We will supply the Committee a complete copy of this study when it is completed in the next several weeks.

3. Offer Technical Assistance to States and Code Officials for Building Energy Code Upgrading -- Our third recommendation for Section 3001 is that it charge the Department of Energy to provide technical assistance to the states and code officials over a period of years to carry out the code upgrade requirement. This charge should instruct the Department to coordinate with the CABO and MEC processes as well as ASHRAE and other private-sector organizations to conduct this technical assistance.

This recommendation goes beyond the current language in Section 3001 by linking it to a state code upgrade requirement, and by requiring DOE to work through the MEC process and with other private sector organizations.

DOE should promote its research and development results through the MEC; it should develop simplified guides and training programs to teach code officials how to apply and enforce the new standards. Promoting upgraded energy standards outside the MEC process will only sustain the confusion and delay that plagues the building codes arena.

Conclusion

The Alliance's work in the buildings sector, including our recent study of the Model Energy Code, convinces us that the Model Energy Code is on the whole cost-effective and practical, and that it is the right consensus vehicle for transferring the state of the art in building energy standards to the marketplace.

We recognize that the MEC is a living document; we look forward to helping it accommodate advances in such areas as passive solar design, air infiltration control and ventilation, mechanical systems, and finer-tuned adaptation to specific climate

conditions. We urge federal agencies, engineering societies, and other leaders in energy standards to join in making the MEC the unified public/private partnership it was designed to be.

Senator WIRTH. Mr. Prindle, thank you very much.

As you all can see, the call on the floor has occurred. I will have to go over and vote. And I will be right back. And so if we could hang on for a minute, I will return shortly.

Thank you.

[Recess.]

Senator WIRTH. The subcommittee will come back to order again. Thank you all very much for your patience.

Mr. Conover.

STATEMENT OF DAVID R. CONOVER, TECHNICAL SERVICES DIRECTOR, NATIONAL CONFERENCE OF STATES ON BUILDING CODES AND STANDARDS

Mr. CONOVER. Thank you. I am Dave Conover, Technical Services Director with NCBS. I have been involved in energy codes and standards development enforcement activities for about 16 years. I would also like to point out I happen to presently serve as the chairman of the ASHRAE standards committee. On the assumption that there would be questions relating to the ASHRAE process standards development, I am prepared to answer those on behalf of ASHRAE.

If there are policy questions or issues, questions relating to positions of this society, Frank Coda, the executive director of ASHRAE is here with me today.

In the development of technical criteria for energy standards, the Federal Government can play an important role in supporting basic research, which will provide a firm foundation for the provisions in these documents. This includes coordination of the efforts of the voluntary sector, and a program plan that is comprehensive enough that the voluntary sector will immediately recognize the benefits of participating.

As to setting standards, there is no role for the Federal Government, unless there is a compelling reason for Federal regulations to preempt State and local regulations. The appropriate Federal role in standards development is to support the efforts of standards developers by sponsoring research which can be used as a basis for improvements in the technical criteria of the standards, helping to coordinate the efforts of the voluntary sector with those at the State and local level, as well as those at the national level supporting the development of educational materials which enhance the application of standards by designers and their enforcement by regulatory officials, and playing a more direct role in developing and coordinating State initiatives in this area under the State Energy Conservation Grants program of DOE.

In brief, DOE should work with the voluntary sector and those representing State government to support those things which are common to all their efforts and to coordinate their programs to allow them to do more with less. The appropriate role for the Federal Government insuring the optimum energy savings potential of the standards, is to directly assist those who must comply with the standards, and those responsible for their enforcement.

Regardless of the energy savings potential inherent in the standards or codes, if compliance is not achieved, energy consumption

will not be realized. Energy consumption reduction will not be realized. University, State and local regulatory personnel responsible for enforcement of these standards need technical support and educational assistance. So too those responsible for satisfying the standards, such as architects and engineers, need similar assistance.

DOE can play a major role in this area and should do so, as they have done in the past. Initial efforts in the 1970's were very successful, and served to bolster enforcement of the first energy codes and standards by State and local government.

During the 1980's this support waned. While some States have carried on with their programs with financial support from DOE under the FCCP program, they are far too fragmented and too costly. The Federal Government should look to the successes of the past and help rekindle the awareness of energy codes and standards by State and local enforcement personnel. Without their direct involvement the energy savings only occur on paper. Even if one assumes that designers, builders, architects and engineers will use their best efforts to satisfy building energy codes and standards, those responsible for actual construction and installation are critical to achieving the desired results.

If the actual field work does not properly implement the intent of the standards or the design, more energy will be consumed. The appropriate Federal law in this area is to support education and other certification programs of industry and the trades and to bolster their ability to address energy issues.

Let me point out that you need to make a distinction between low-rise residential construction and high-rise residential and commercial buildings. There is a distinct difference between ASHRAE standards dealing with those structures, the model energy code. There is a distinct difference with which State and local enforcement officials conduct compliance and enforcement evaluations of these types of structures.

To give you an example, in the State of Wisconsin, every building, essentially a commercial building, must have the plan submitted to a State agency for plan review and approval, and they must be sealed by an architect or an engineer licensed to practice in the State of Wisconsin. State law also provides that the architect or engineer of record certify at occupancy that the building was built in accordance with the plans and State law. In that instance it is not appropriate, in my opinion, to codify ASHRAE Standard 90.1 for commercial buildings, but in that instance the standard can be adopted directly by reference in State law.

So when you talk about commercial buildings, it is appropriate to consider that the way State building construction regulations are set up, the standard can be adopted by reference, made part of State law, and the architect or engineer of record responsible for getting the standard and implementing it, and DOE's efforts should be more place in educating the enforcement personnel on how to check to make sure the building is built in accordance with the approved plans.

In the terms of residential construction, it is a slightly different issue. Thank you.

[The prepared statement of Mr. Conover follows:]

TESTIMONY BEFORE THE
ENERGY REGULATION AND CONSERVATION SUBCOMMITTEE
OF THE SENATE ENERGY AND
NATURAL RESOURCES COMMITTEE

IN THE MATTER OF: S341,
NATIONAL ENERGY SECURITY ACT OF 1991

WRITTEN TESTIMONY
OF THE
NATIONAL CONFERENCE OF STATES
ON BUILDING CODES AND STANDARDS, INC.

By: David R. Conover
Technical Services Division
NCSBCS, Inc.
505 Huntmar Park Drive
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March 19, 1990

GOOD MORNING, MY NAME IS DAVID R. CONOVER, TECHNICAL SERVICES DIRECTOR OF THE NATIONAL CONFERENCE OF STATES ON BUILDING CODES AND STANDARDS (NCSBCS). SINCE 1976 I HAVE BEEN ACTIVELY INVOLVED IN THE DEVELOPMENT OF BUILDING ENERGY CODES AND STANDARDS AS WELL AS THEIR ADMINISTRATION AND ENFORCEMENT AT THE STATE AND LOCAL LEVEL.

NCSBCS IS A NONPROFIT CORPORATION FOUNDED IN 1967 BY OUR NATION'S GOVERNORS TO SERVE THE BUILDING CODE AND PUBLIC SAFETY INTERESTS OF OUR 50 STATES AND SEVERAL TERRITORIES. THE OBJECTIVES OF NCSBCS ARE TO FOSTER INCREASED INTERSTATE COOPERATION AND TO COORDINATE INTERGOVERNMENTAL REFORMS IN THE AREA OF BUILDING CODES AND STANDARDS. IN 1972, THE STANDARDS AND EVALUATION COMMITTEE OF NCSBCS REQUESTED THAT THE NATIONAL BUREAU OF STANDARDS (NBS) (NOW THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)) DEVELOP A STANDARD WHICH STATES COULD USE TO REGULATE THE ENERGY CONSERVATION FEATURES OF NEW CONSTRUCTION. THE REASON FOR THIS REQUEST WAS TO ALLEVIATE THE DUPLICATION IN PROGRAMS WHICH SO OFTEN OCCURS WHEN THERE IS NO NATIONAL OVERSIGHT OR ASSISTANCE. IN 1974, NBS PUBLISHED "DESIGN AND EVALUATION CRITERIA FOR ENERGY CONSERVATION IN NEW BUILDINGS," A DOCUMENT WHICH REPRESENTED THE FIRST TRUE ENERGY STANDARD.

REALIZING CONSENSUS ON THE CRITERIA IN THIS DOCUMENT WAS CRITICAL TO THEIR ADOPTION AND USE, NCSBCS REQUESTED THAT THE AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS

(ASHRAE) DEVELOP A NATIONAL VOLUNTARY CONSENSUS STANDARD USING THE NBS DOCUMENT AS A BASIS. ASHRAE ESTABLISHED A STANDARD PROJECT COMMITTEE OF A BALANCE OF INTERESTED AND AFFECTED PARTIES AND AFTER CONSIDERABLE EFFORT, PUBLISHED ASHRAE STANDARD 90-75, "ENERGY CONSERVATION IN NEW BUILDING DESIGN" IN 1975. CONCURRENTLY, THE FEDERAL GOVERNMENT WAS PASSING LEGISLATION TO ADDRESS THE ENERGY CRISIS THROUGH BUILDING CODES. AS PART OF THIS LEGISLATION, STATES WERE OFFERED FINANCIAL INCENTIVES IF THEY ADOPTED AN ENERGY CODE OR STANDARD NO LESS STRINGENT THAN ASHRAE 90-75. WITH THE ENERGY CRISIS AND OFFER OF FINANCIAL SUPPORT, MANY STATES DID ENACT BUILDING ENERGY REGULATIONS. IN CONJUNCTION WITH THE REGULATIONS IMPLEMENTING THE FEDERAL LEGISLATION, THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA) (NOW DEPARTMENT OF ENERGY (DOE)) PROVIDED TECHNICAL AND PROGRAMMATIC SUPPORT TO THE STATES. ONE SUCH EFFORT FOCUSED ON THE CODIFICATION OF THE ASHRAE STANDARD AND PRODUCTION OF A MODEL ENERGY CODE FOR ADOPTION AND ENFORCEMENT BY STATE AND LOCAL GOVERNMENT IN 1977. IN ADDITION, TRAINING PROGRAMS WERE DEVELOPED TO ASSIST STATE AND LOCAL REGULATORY OFFICIALS WITH ENERGY ISSUES IN THEIR PLAN REVIEW AND CONSTRUCTION INSPECTION ACTIVITIES.

SINCE THAT TIME STATE AND LOCAL BUILDING ENERGY INITIATIVES HAVE CONTINUED, AS HAS THE EVOLUTION OF ENERGY CODES AND STANDARDS CRITERIA. THE RECENT PUBLICATION OF ASHRAE STANDARD 90.1-1989, "ENERGY CONSERVATION IN NEW BUILDING DESIGN, EXCEPT LOW-RISE

RESIDENTIAL," IS A TRIBUTE TO THE EFFORTS OF THE VOLUNTARY SECTOR IN THIS IMPORTANT AREA. DOE STAFF, AND NUMEROUS OTHER INDIVIDUALS, PARTICIPATED IN THIS EFFORT.

STATE GOVERNMENT HAS THE AUTHORITY TO ADOPT BUILDING ENERGY CONSTRUCTION REGULATIONS AND IN MOST INSTANCES HAS EXERCISED THAT AUTHORITY SINCE THE LATE 70s. THESE EARLY BUILDING ENERGY INITIATIVES WERE SUPPORTED WITH TECHNICAL AND FINANCIAL SUPPORT FROM THE FEDERAL GOVERNMENT. AS EMPLOYEES OF STATE AND LOCAL GOVERNMENT WERE RESPONSIBLE FOR ENFORCEMENT OF THESE BUILDING ENERGY CODES AND STANDARDS, THEY NEEDED AND RECEIVED TECHNICAL ASSISTANCE AND SUPPORT FROM THE RESPONSIBLE FEDERAL AGENCIES. WHEN PLANS WERE REVIEWED AND NEW CONSTRUCTION INSPECTED THERE WAS A CLEAR UNDERSTANDING AND IMPLEMENTATION OF THE ENERGY CRITERIA. THE FEDERAL ROLE WAS TO SUPPORT THE VOLUNTARY SECTOR IN CARRYING OUT THEIR FUNCTIONS TO ASSIST THOSE ADOPTING AND IMPLEMENTING THESE DOCUMENTS. AT THAT TIME, NCSBCS PLAYED A PIVOTAL ROLE WITH THE FEDERAL GOVERNMENT IN BRIDGING THE FEDERAL ROLE WITH STATE AND LOCAL GOVERNMENT.

DURING THE 80s, THE ROLE OF THE FEDERAL GOVERNMENT SEEMED TO CHANGE WITH LESS TECHNICAL SUPPORT AND COORDINATION OF STATE AND LOCAL ACTIVITIES AND MORE RESEARCH-ORIENTED COMPUTER SIMULATION AND ENERGY ANALYSIS. THE NEEDS OF THE STATES IN THE AREA OF EDUCATION, TRAINING, AND IMPLEMENTATION OF BUILDING ENERGY STANDARDS WERE, AND STILL ARE TODAY, ADDRESSED THROUGH FINANCIAL

SUPPORT FROM THE STATE ENERGY CONSERVATION GRANTS PROGRAM (SECP) OF DOE. THIS PROGRAM PROVIDES FINANCIAL SUPPORT TO STATES BUT IS REMISS IN COORDINATING THE INDIVIDUAL STATE INITIATIVES IN BUILDING ENERGY CODES. DURING THE 80s, EACH STATE, WITH NO DIRECTION FROM THE FEDERAL GOVERNMENT, TOOK THE SECP MONEY AND IMPLEMENTED WHAT THEY FELT APPROPRIATE. TODAY, MUCH OF THE UNIFORMITY FOUND IN STATE PROGRAMS HAS BEEN LOST. IN ADDITION, THERE HAS BEEN VERY LITTLE TECHNICAL SUPPORT OR FEDERAL COORDINATION ON THE EDUCATION AND TRAINING OF STATE AND LOCAL REGULATORY PERSONNEL. A CLOSE LOOK AT THE PAST, AS WE SUGGESTED TO DOE OFFICIALS OVER ONE YEAR AGO, HOLDS THE KEY TO THE APPROPRIATE ROLE FOR THE FEDERAL GOVERNMENT IN BUILDING ENERGY CODES AND STANDARDS.

IN THE DEVELOPMENT OF THE TECHNICAL CRITERIA FOR ENERGY STANDARDS, THE FEDERAL GOVERNMENT CAN PLAY AN IMPORTANT ROLE IN SUPPORTING BASIC RESEARCH WHICH WILL PROVIDE A FIRM FOUNDATION FOR THE PROVISIONS IN THESE DOCUMENTS. THIS INCLUDES COORDINATION OF THE EFFORTS OF THE VOLUNTARY SECTOR AND A PROGRAM PLAN THAT IS COMPREHENSIVE ENOUGH THAT THE VOLUNTARY SECTOR WILL IMMEDIATELY RECOGNIZE THE BENEFITS OF PARTICIPATING. THIS SHOULD NOT MEAN DOE AND OTHERS AT THE FEDERAL LEVEL SHOULD DO ALL THE WORK, BUT SUCH A NATIONAL PRESENCE WILL FOSTER COOPERATION AND ELIMINATE DUPLICATION AND CONFLICT. THIS SHOULD BE DONE, AS IT WAS IN THE PAST, WITH ORGANIZATIONS REPRESENTING THE STATES, AS WELL AS THOSE IN THE VOLUNTARY SECTOR.

AS TO SETTING STANDARDS, THERE IS NO ROLE FOR THE FEDERAL GOVERNMENT UNLESS THERE IS A COMPELLING REASON FOR FEDERAL REGULATIONS TO PREEMPT STATE AND LOCAL REGULATIONS. AN EXAMPLE WOULD BE THE NATIONAL APPLIANCE EFFICIENCY STANDARDS WHICH ELIMINATED THE IMPACTS A PATCHWORK OF DIFFERENT STATE STANDARDS COULD HAVE ON APPLIANCE MANUFACTURERS. WHERE THERE IS NO SUCH NATIONAL ISSUE, THEN STATE AND LOCAL GOVERNMENTS SHOULD RETAIN THE RIGHT TO ADOPT AND ENFORCE BUILDING REGULATIONS TO ADDRESS THEIR PARTICULAR NEEDS. THE VOLUNTARY SECTOR IN THE UNITED STATES HAS FOR OVER 100 YEARS DEVELOPED STANDARDS AND CRITERIA UPON WHICH STATE AND LOCAL GOVERNMENTS CAN BASE THEIR REGULATIONS. THE APPROPRIATE FEDERAL ROLE IN STANDARDS DEVELOPMENT IS TO SUPPORT THE EFFORTS OF STANDARDS DEVELOPERS BY:

- SPONSORING RESEARCH WHICH CAN BE USED AS A BASIS FOR IMPROVEMENTS IN THE TECHNICAL CRITERIA OF THE STANDARDS;
- HELPING TO COORDINATE THE EFFORTS OF THE VOLUNTARY SECTOR WITH THOSE AT THE STATE AND LOCAL LEVEL AS WELL AS THOSE AT THE NATIONAL LEVEL;
- SUPPORTING THE DEVELOPMENT OF EDUCATIONAL MATERIALS WHICH ENHANCE THE APPLICATION OF STANDARDS BY DESIGNERS AND THEIR ENFORCEMENT BY REGULATORY OFFICIALS; AND

- PLAYING A MORE DIRECT ROLE IN DEVELOPING AND COORDINATING STATE INITIATIVES IN THIS AREA UNDER THE SECP PROGRAM.

IN BRIEF, DOE SHOULD WORK WITH THE VOLUNTARY SECTOR AND THOSE REPRESENTING STATE GOVERNMENT TO SUPPORT THOSE THINGS WHICH ARE COMMON TO ALL THEIR EFFORTS AND TO COORDINATE THEIR PROGRAMS TO ALLOW THEM TO DO MORE WITH LESS. NCSBCS REGULARLY RECEIVES CALLS FROM STATE AND LOCAL GOVERNMENT AS WELL AS DESIGNERS AND BUILDERS ABOUT ENERGY CODES AND STANDARDS. BASED ON THE QUESTIONS ASKED, IT IS EVIDENT THAT THERE IS A LACK OF KNOWLEDGE ABOUT WHAT IS GOING ON IN THIS IMPORTANT AREA. INDIVIDUALS INVOLVED IN THIS IMPORTANT AREA NEED INFORMATION AND ASSISTANCE RELATIVE TO STANDARDS. DOE SHOULD PROVIDE MORE OF THIS ASSISTANCE FOR THE STANDARDS THAT ARE HERE TODAY, AND LESS EMPHASIS ON COMPUTER SIMULATIONS ABOUT WHAT FUTURE STANDARDS MIGHT LOOK LIKE. AS DISCUSSED BELOW, IF THOSE USING THE CRITERIA OR ENFORCING THE CRITERIA DO NOT UNDERSTAND OR IMPLEMENT THE CRITERIA, THE POTENTIAL FOR ENERGY SAVINGS REMAINS A COMPUTER SIMULATION DREAM.

THE APPROPRIATE ROLE FOR THE FEDERAL GOVERNMENT IN ENSURING THE OPTIMUM ENERGY SAVINGS POTENTIAL OF THE STANDARDS IS TO DIRECTLY ASSIST THOSE WHO MUST COMPLY WITH THE STANDARDS AND THOSE RESPONSIBLE FOR THEIR ENFORCEMENT. REGARDLESS OF THE ENERGY SAVINGS POTENTIAL INHERENT IN THE STANDARDS OR CODES, IF COMPLIANCE IS NOT ACHIEVED, ENERGY CONSUMPTION WILL NOT BE REDUCED. WHAT FEW STUDIES CONDUCTED OF HOW ACTUAL CONSTRUCTION

FARED COMPARED TO THE REQUIREMENTS IN THE CODE OR STANDARD SHOW THAT MANY OF THE CURRENT REQUIREMENTS ARE NOT BEING SATISFIED. COMPLEXITY OF THE TECHNICAL CRITERIA IS OFTEN TARGETED AS A CULPRIT FOR NON-COMPLIANCE. IN ADDITION, STATE AND LOCAL BUILDING REGULATORY AGENCIES HAVE A LARGE TURNOVER IN STAFF AND ARE CONSTANTLY UNDER PRESSURE TO DO MORE WITH LESS. IN MANY RURAL AREAS ONE PART-TIME INSPECTOR MAY BE RESPONSIBLE FOR A LARGE MUNICIPALITY AND AT BEST ONLY CONDUCTS AN INSPECTION AT THE TIME CONSTRUCTION IS COMPLETED AND OCCUPANCY REQUESTED. IN THIS SITUATION IT IS IMPOSSIBLE TO ASCERTAIN IF COMPLIANCE WAS ACHIEVED. EVEN WHERE THERE ARE MORE INSPECTIONS DURING CONSTRUCTION, THERE ARE COUNTLESS ITEMS TO CHECK AND MANY INSPECTORS LACK THE NECESSARY TOOLS TO SIMPLIFY THE ENERGY CONSERVATION FUNCTION RELATED TO INSPECTION. THIS HOLDS TRUE FOR PLAN REVIEW FUNCTIONS AS WELL. UNIVERSALLY, STATE AND LOCAL REGULATORY PERSONNEL RESPONSIBLE FOR ENFORCEMENT OF THESE STANDARDS NEED TECHNICAL SUPPORT AND EDUCATIONAL ASSISTANCE. SO TOO, THOSE RESPONSIBLE FOR SATISFYING THE STANDARDS NEED SIMILAR ASSISTANCE.

DOE CAN PLAY A MAJOR ROLE IN THIS AREA AND SHOULD DO SO AS THEY HAVE DONE IN THE PAST.

INITIAL EFFORTS IN THE 70s WERE VERY SUCCESSFUL AND SERVED TO BOLSTER ENFORCEMENT OF THE FIRST ENERGY CODES AND STANDARDS BY STATE AND LOCAL GOVERNMENTS. DURING THE 80s, THIS SUPPORT WANED.

WHILE SOME STATES HAVE CARRIED ON WITH THEIR PROGRAMS, THEY ARE FAR TOO FRAGMENTED AND TOO COSTLY. THE FEDERAL GOVERNMENT SHOULD LOOK TO THE SUCCESS OF THE PAST AND HELP REKINDLE THE AWARENESS OF ENERGY CODES AND STANDARDS BY STATE AND LOCAL ENFORCEMENT PERSONNEL. WITHOUT THEIR DIRECT INVOLVEMENT, THE ENERGY SAVINGS OCCUR ONLY ON PAPER.

EVEN IF ONE ASSUMES THAT DESIGNERS, BUILDERS, ARCHITECTS, AND ENGINEERS WILL USE THEIR BEST EFFORTS TO SATISFY BUILDING ENERGY CODES AND STANDARDS, THOSE RESPONSIBLE FOR ACTUAL CONSTRUCTION AND INSTALLATION ARE CRITICAL TO ACHIEVING THE DESIRED RESULTS. JUST AS WITH INSPECTORS, IF THE ACTUAL FIELD WORK DOES NOT PROPERLY IMPLEMENT THE INTENT OF THE STANDARDS, MORE ENERGY WILL BE CONSUMED. A GOOD EXAMPLE OF THE LACK OF ATTENTION TO PROPER INSTALLATION IS FOUND IN A MAJOR CONCERN FROM THE INSURANCE INDUSTRY. WHY WOULD THE INSURANCE INDUSTRY CARE ABOUT ENERGY CODES? BROKEN WATER PIPES IN EXTERIOR WALLS CONTRIBUTE SIGNIFICANTLY TO THEIR LOSSES EACH YEAR. BY NOT PUTTING THE WALL INSULATION AROUND THE PIPE AND LEAVING THE PIPE EXPOSED AND UNINSULATED TO THE EXTERIOR SHEATHING, THE PIPE IS SUBJECTED TO TEMPERATURES WHICH APPROACH THOSE OF THE EXTERIOR. THEIR CONCERN IS EDUCATING CONTRACTORS SO THAT THIS DOES NOT OCCUR. WHILE THEY RECOGNIZE THAT ENFORCEMENT PERSONNEL CAN ASSIST IN THIS AREA, THEY REALIZE THAT IT IS NOT FEASIBLE TO INSPECT EACH ASPECT OF EVERY NEW STRUCTURE. THE APPROPRIATE FEDERAL ROLE IN THIS AREA IS TO SUPPORT EDUCATION AND CERTIFICATION PROGRAMS OF INDUSTRY

AND THE TRADES AND BOLSTER THEIR ABILITY TO ADDRESS ENERGY ISSUES.

IN SUMMARY, THE APPROPRIATE FEDERAL ROLE IN STANDARDS DEVELOPMENT IS TO PARTICIPATE IN THE WORK OF THE VOLUNTARY SECTOR AND COORDINATE THE EFFORTS OF ALL INVOLVED IN ENERGY CODES AND STANDARDS. ALL INVOLVED NEED A CENTRAL FOCAL POINT FROM WHICH TO GAUGE THEIR ACTIVITIES AND INITIATIVES. THE FEDERAL GOVERNMENT SHOULD ALSO SUPPORT THE EFFORTS OF THE PRIVATE SECTOR IN THEIR EFFORTS TO DEVELOP ENERGY CODES AND STANDARDS. THEY SHOULD ALSO SUPPORT APPROPRIATE ORGANIZATIONS REPRESENTING THOSE ON THE "FRONT LINES" OF CODE ADMINISTRATION, APPLICATION, AND ENFORCEMENT. IF ONE LOOKS TO THE INITIAL SUCCESSES OF THE 70s IN THIS IMPORTANT AREA, THE KEYS TO FUTURE SUCCESSES WILL BE FOUND.

Senator WIRTH. Mr. Conover, thank you very much.
Mr. Lach.

**STATEMENT OF J. LARRY LACH, PRESIDENT, MINERAL
INSULATION MANUFACTURERS ASSOCIATION**

Mr. LACH. Thank you, Mr. Chairman.

As president of the Mineral Insulation Manufacturers Association, or MIMA, I am testifying in behalf of our industry. We are the manufacturers of fiber glass and rock wall insulation, and we certainly appreciate and thank you for this opportunity to submit our comments on S. 341.

A lesson of the oil embargo era, which we learned certainly rather quickly as a result of events in the Persian Gulf, is that America must certainly strive for greater energy independence, and take more advantage of very large domestic source of energy called energy conservation. We therefore commend you for introducing S. 341.

Today, insulation saves America the equivalent of 4 billion barrels of oil a year, and that is equivalent to the amount of oil carried by approximately 3,000 oil supertankers. However, the conservation measures that have already taken effect in this country for homes, office buildings and industrial facilities, while it is significant, are modest compared to what can be done.

In supporting S. 341 we would like to suggest some modifications to the bill for your committee to consider to strengthen its objectives. In particular, we support section 3002, the provision to provide financial assistance to States and local organizations to help develop a voluntary, uniform home energy rating system.

We urge the committee to modify section 3001(d) so that it does not strike section 109 of the Cranston-Gonzales National Affordable Housing Act. Section 109 requires HUD to establish minimum energy efficiency levels for federally assisted, financed, and insured housing to be at least equal to those set forth in the 1989 model energy code.

A substantial body of research has already proved that the 1989 model energy code of CABO is the most cost effective code for all single-family and low-rise multi-family homes. For multi-family high-rise homes, as well as commercial buildings, we also recommend that HUD be directed to adopt the latest standard developed by ASHRAE that is called, of course, Standard 91. It was designed specifically, again, for commercial and multi-family, high-rise residential buildings—by ASHRAE and the illuminating engineering society, I might add to Dave Conover's remarks.

We also recommend that the committee add a provision directing DOE to provide training and assistance to States with codes meeting or exceeding the model energy code and ASHRAE standard 90.1, in order to assist them in the implementation of these standards by building designers and code inspectors.

We also suggest that you add a provision to the bill encouraging the development of energy efficient mortgages. Current many lenders do not give purchasers of energy efficient homes credit for their lower total housing expenses. Incorporating energy efficient into

their qualification formulae would qualify more potential home purchasers.

Today, each Federal agency or secondary market entity uses a different method to determine the characteristics of an energy efficient home.

Senator WIRTH. Excuse me Mr. Lach, let me just ask you, is that already in the housing bill of last year, the provision related to mortgages and energy efficiency in mortgages? We could check that for the record.

Mr. LACH. I do not think there is anything in there, Mr. Chairman, that has much teeth in it, to my knowledge.

Senator WIRTH. Why do we not check that, and maybe you and Mr. Prindle might get together afterward. Could you do that, because I think that we wrote that into the legislation? We thought we had done it in just the way that you suggested.

Mr. LACH. I will check that with Bill, and certainly we will report back to you, Senator.

Senator WIRTH. Check with the staff afterward, if you can do that, because we thought we had done that.

Mr. LACH. Very good, thank you. Of course the result now is that lenders remain as confused as builders and borrowers, and rarely encourage homeowners to take advantage of these programs.

S. 341 could substantially advance the efforts to finance energy efficient homes by encouraging Federal agencies and Federally chartered secondary mortgage entities to develop a consensus on underwriting guidelines for financing energy efficient homes.

A minimum requirement for these homes in this consensus guideline effort should be that they be built according to at least the CABO model energy code.

Finally we recommend adding a provision that would set a time limit for HUD to update thermal standards for manufactured housing that was required by the Housing Community and Development Act of 1987, four years ago, and this update still has not taken place.

Manufactured homes, often cited as affordable housing, are actually in many cases not very affordable, because of energy inefficient design and construction, resulting in exorbitant utility bills for the hapless homeowner.

In summary, our industry supports most provisions of this bill as written, and we urge the committee to further enhance its effectiveness as we outline. By adding the few provisions we have suggested we believe that you will better enable our country to reduce its energy consumption, reduce Americans' energy bills, while protecting the environment, make housing more affordable, and of course, make America more energy independent.

Thank you for the opportunity to testify, Mr. Chairman.

[The prepared statement of Mr. Lach follows:]

Written Testimony of

J. Larry Lach
President

Mineral Insulation Manufacturers Association

submitted to the

SENATE SUBCOMMITTEE ON ENERGY AND NATIONAL RESOURCES

March 19, 1991

**INTRODUCTION -- MIMA'S EXPERTISE AND EXPERIENCE
IN ENERGY EFFICIENCY**

The Mineral Insulation Manufacturers Association, better known as MIMA, appreciates this opportunity to submit its comments on S. 341, the National Energy Security Act of 1991. On behalf of all the members of our industry, we thank you for requesting and encouraging our association's comments on this pending legislation.

Background on MIMA

MIMA is a trade association of the largest and most respected U.S. companies that manufacture fiber glass and rock wool insulation.

Our combined member companies include CertainTeed Corporation, Knauf Fiber Glass, Manville Building Products Corporation, Owens-Corning Fiberglas Corporation, Rock Wool Manufacturing Company, U.S. Mineral Products Company and Western Fiberglass Incorporated.

Together, our member companies have facilities and employees in virtually every state in the country.

For more than half a century now, our industry has worked to promote energy efficiency, American energy independence and environmental protection through better-insulated homes, building and industries.

In addition to underwriting substantial amounts of research on energy efficiency and environmental protection, MIMA members have played important roles in the development of national, state and local programs that influence and promote the practical benefits of energy efficiency.

All of these efforts have been undertaken with the sincere hope that they would accelerate the process of helping America conserve energy, become less dependent on oil imports and better protect our country and our planet.

The Importance of Energy Efficiency

On behalf of our industry and our member companies, we would like to commend the initiatives of S. 341, the National Energy Security Act of 1991. This bill has the potential to begin to move our country toward a new era of energy efficiency.

The real lesson of the oil embargoes of the 1970s -- which we have relearned rather quickly as a result of events in the Persian Gulf -- is that America must realize it has a "new," very large and readily accessible source of energy -- energy conservation.

Seeking to achieve energy conservation and energy efficiency is a more cost-effective technique than seeking to provide new energy supplies for inefficient energy use. At this time in our history, when national attention is once again focused on the need to use energy wisely and efficiently, we commend you for proposing this bill, which would help ensure that America undertakes substantial, new methods of promoting and exploiting energy efficiency.

OVERVIEW -- PROVISIONS OF S. 341 FOR WHICH MIMA ENCOURAGES ADOPTION, REVISION OR ADDITION

MIMA would like to take this opportunity to express its support for several key provisions of the National Energy Security Act of 1991. We would also like to suggest a few revisions and/or additions to the bill for your committee to consider, that would enhance the energy-conservation measures and objectives the bill currently provides.

In particular, MIMA supports:

- the provision (Section 3002) which would require the Department of Energy (DOE) to provide financial assistance to states and local organizations to help develop a voluntary uniform energy-rating system for homes, and which would require that all homes receive an energy-efficiency rating at the time of sale;

- the provision (Section 3003) which would improve the energy efficiency of energy-intensive industries and industrial processes by directing DOE to pursue a research-and-development program and a joint-venture program; and
- the provision (Section 3005) that would require DOE, in cooperation with utility companies and major energy-using industries, to establish voluntary guidelines for conducting energy audits and installing insulation, for the purpose of identifying cost-effective options for reducing energy use.

In addition to these provisions, which MIMA supports, we would like to urge the committee to:

- modify (Section 3001[d]) so that it does not strike Section 109 of the Cranston-Gonzalez National Affordable Housing Act (Public Law 101-625).

Substantial research continues to prove that the 1989 Council of American Building Officials (CABO) Model Energy Code (MEC) [Appendix B] is the most cost effective code for all homes except multifamily high-rise buildings. For multifamily high-rise residences HUD should be directed to adopt the latest American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and Illuminating Engineering Society of North America (IES) Standard 90.1-1989 - "Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings," [Appendix B] which is designed specifically for commercial and multifamily high rise residential buildings;

- add a provision that would direct DOE to provide training and technical assistance to states that meet or exceed the 1989 CABO MEC and ASHRAE/IES Standard 90.1-1989, in order to assist them in the implementation of these residential and commercial energy codes and standards;
- add a provision encouraging the development of energy-efficient mortgages for homes built to the specifications of the 1989 CABO MEC from the secondary mortgage programs of the Federal National Mortgage Association (FNMA) and the Federal Home Loan Mortgage Corporation (FHLMC);

- add a provision to encourage the U.S. Department of Housing and Urban Development (HUD) to update thermal standards for manufactured housing as required by Section 568 of the Housing and Community Development Act of 1987 (Public Law 100-242).

We would now like to provide our expanded comments on various provisions of the bill in more detail.

SECTION 3001 -- ESTABLISH THE 1989 CABO MEC AND ASHRAE/IES STANDARD 90.1-1989 AS THE ENERGY-EFFICIENCY STANDARDS FOR HOMES, COMMERCIAL BUILDINGS AND HIGH-RISE MULTIFAMILY RESIDENTIAL BUILDINGS

MIMA strongly supports Section 3001, which would establish -- on a national basis -- building energy-efficiency standards, especially in public housing. We believe this is a critical provision. American homes and office buildings should be built as energy efficient as possible; and the good news is that cost-effective standards already exist. For residences, there is the 1989 CABO MEC. For commercial and high-rise multifamily residential buildings, there is the ASHRAE/IES Standard 90.1-1989 developed by the American Society of Heating, Refrigerating and Air Conditioning Engineers.

Why the 1989 CABO MEC Should be the Standard for American Homes

Research has proven again and again that the 1989 CABO MEC is the most cost-effective energy-efficiency code for homes. Earlier this year, a study was completed by the prestigious Battelle-Pacific Northwest Laboratories, which conducts a lot of work for DOE. [See Appendix A.] Results from the Battelle study show the cost effectiveness and overall rationale for adopting the 1989 CABO MEC as the energy standard for homes.

The study looked at three codes: the 1989 CABO MEC, the U.S. Department of Housing and Urban Development's (HUD's) Minimum Property Standards (MPS), and the 1986 version of the MEC.

According to this study, homes built according to the 1989 CABO MEC required substantially less energy to heat and cool than homes built according to other codes. In fact, the energy-efficient measures in the 1989 CABO MEC saved homeowners money during the first year of home ownership and over a 30-year period (compared to the 1986 MEC).

Of these codes, the 1989 CABO MEC, which had the most energy-efficiency requirements, was the most economically beneficial to home buyers in all cases analyzed. It created a positive first-year cash flow and reduced life cycle costs.

Regarding home heating and cooling costs, the study found that homes built according to the 1989 CABO MEC required substantially less energy to heat than homes built according to the other codes. The 1989 CABO MEC saved homeowners considerably more money on heating energy costs than the other codes in nearly every instance.

The energy-efficiency improvements resulting from the 1989 CABO MEC saved consumers as much as 36 percent on total heating and cooling energy consumption compared with the 1986 MEC. In 16 of the 17 cities studied, the energy savings exceeded 18 percent.

Examining the impact codes have on homeowners' first-year cash flows (aside from the down payment) provides important insights. The examination quantifies the effect the codes have on the first-year cash flow. The first-year cash flow is considered to include heating and cooling fuel costs, mortgage costs, tax deductions of mortgage interest and property taxes. It does not include the down payment or loan fees, which are one-time transaction costs that do not occur in other years.

Here the study found:

- The 1989 CABO MEC is the most cost-effective code in terms of the money homeowners save in the first year after buying a home as a result of energy-efficiency measures.
- In all locations, the 1989 CABO MEC produced a positive cash flow compared to the 1986 MEC -- ranging from \$6 to \$122 in the first year.

Examining the life-cycle costs of energy-saving measures is considered by researchers to be the most comprehensive way to examine the economic impact of codes. To determine the life cycle costs, researchers must add up and compare all the benefits and costs associated with the energy-saving measures the codes require.

Here the study found:

- Higher energy-efficiency requirements produce higher dollar savings over the course of a 30-year mortgage.

- The 1989 CABO MEC was the most cost-effective code from the standpoint of a 30-year mortgage.
- In all locations, the 1989 CABO MEC reduced a homeowner's life cycle costs relative to the 1986 code. The life cycle cost savings from the 1989 CABO MEC ranged between \$94 and \$2,692.

In addition to the compelling findings of the Battelle study, there are other reasons for supporting adoption of the 1989 CABO MEC as well. Prominent among these reasons is the ease of compliance. Homes can easily be built to the code, so compliance is not difficult. In fact, complying with the code's recommendations can be accomplished with available and conventional construction techniques and materials. There are a number of trade-offs that prove the code's flexibility. The code is performance based and not prescriptive.

Setting the 1989 CABO MEC as the energy-efficiency measure for American homes would enable the country to reduce its energy consumption, enable consumers to reduce their energy bills and, moreover, help enable the country to be less dependent on foreign oil.

There are other far-reaching benefits that adoption of the 1989 CABO MEC would involve -- and one of these is improved environmental protection. Homes made more energy efficient through better insulation will use significantly less energy, and less energy used means lower amounts of harmful gases released into the atmosphere. When fossil fuels such as oil or gas are burned to create energy, carbon dioxide and sulfur dioxide are released into the air. Carbon dioxide is one of the principal "greenhouse gases," believed to be responsible for a slow warming of the earth's temperature. Sulfur dioxide is the principal cause of acid rain. Proper levels of insulation can make an environmentally significant difference in the amount of these gases currently produced by a typical home. According to a DOE study, the heating and cooling equipment in U.S. homes in 1980 spewed forth 146 million tons of carbon dioxide -- 11 percent of total carbon-dioxide emission that year.

In June 1988, the U.S. Department of Energy issued a study, also undertaken by the Battelle-Pacific Northwest Laboratories entitled, "Impacts of Alternative Residential Energy Standards -- Rural Housing Amendments Study," which compared the HUD minimum property standards for single-family housing, the Farmers' Home Administration (FmHA) Title V construction standard, the HUD manufactured housing standard, and the ASHRAE Standard 90A-80. The study concluded that the FmHA Title V standard was the most cost effective and had the lowest life-cycle costs of all the standards reviewed, for both site-built and manufactured homes. The FmHA Title V standard was the basis for the 1989 CABO MEC so these conclusions are similarly applicable to the 1989 CABO MEC.

Another study by American Electric Power and the Tennessee Valley Authority entitled "An Efficient Approach to Reducing Acid Rain," found that energy-efficiency programs can also reduce the cost of cleaning up acid rain. Even a modest program that reduced electricity demand by 3 to 4 percent could save consumers 16 to 20 percent of what they would otherwise pay to reduce sulfur-dioxide emissions, the study found.

Additionally, a study to be released soon by the Alliance to Save Energy, which compared the 1989 MEC to the current energy code, proves that if the 1989 CABO MEC were adopted in 34 states, 8 trillion BTU's would be saved and 572,000 tons of air pollutants would be avoided in one year.

Why ASHRAE Standard 90.1-1989 Should be
the Standard for Commercial and High-Rise
Multifamily Residential Buildings

It has been estimated that as much as 40 percent of the energy used to heat, cool and illuminate buildings and to provide hot water and other building services would be saved through the effective application of existing technology without reducing building performance or occupant comfort. One of the keys to achieving these savings is standardization and codes for building designs.

ASHRAE Standard 90.1-1989 sets minimum requirements for the energy efficiency design of new buildings so that they may be constructed, operated and maintained in a manner that minimizes the use of energy without constraining the building function.

The ASHRAE Standard 90.1-1989 also provides criteria for energy-efficient design and methods for determining compliance with these criteria, as well as sound guidance for energy efficient design.

Additionally, the Southern Building Code Congress International (SBCCI) has incorporated ASHRAE Standard 90.1-1989 in Appendix J of the Standard Building Code and Section B101 of the Standard Mechanical Code for commercial buildings. And the Council of American Building Officials (CABO) has recently approved a reference to ASHRAE Standard 90.1-1989 as an energy alternative criterion for buildings other than residential buildings that are three stories or less.

Both the 1989 CABO MEC and ASHRAE Standard 90.1-1989 are voluntary industry consensus standards that have built in mechanisms allowing for constant review and periodic updating by professionals in the building industry. They are "state of the art" standards.

For these reasons, MIMA supports this provision and encourages the committee to specify the 1989 MEC and ASHRAE 90.1 as the energy-efficiency codes for homes and commercial buildings, respectively.

SECTION 3002 -- SUPPORT THE CREATION OF VOLUNTEER UNIFORM ENERGY-RATING SYSTEMS FOR HOMES

MIMA encourages the development of a uniform energy rating system. The system should be used voluntarily to assess the energy efficiency of homes. It is important that consumers have relevant information of the energy efficiency of new and existing homes.

The voluntary application of a uniform rating system, which can be applied to existing homes, can enhance opportunities for upgrading the energy efficiency of existing housing.

SECTION 3005 -- IMPROVING THE ENERGY EFFICIENCY OF AMERICAN INDUSTRY

MIMA also strongly supports Sections 3005 which would encourage improved energy efficiency of the country's industrial sector by establishing voluntary guidelines for energy efficient audits of industrial facilities. Also included in this section is a provision to develop energy efficient voluntary guidelines for industrial insulation as an element of industrial audits.

We already know that insulation saves America the equivalent of four billion barrels of oil a year, equivalent to approximately 72 billion dollars (based on an oil price of \$18 a barrel). That is equivalent to the amount of oil carried by 3,000 Exxon Valdez supertankers -- and to the annual energy output of 700 additional 1,000-megawatt power plants operating at full capacity. [Appendix B]

While the country has guidelines, standards and codes for saving energy when it comes to residences and commercial buildings, we have nothing comparable for industry. Yet industry uses more energy than homes and commercial buildings combined. Industry is the single largest consumer of energy and, thus, offers the greatest opportunity for savings.

There are huge energy and environmental savings to be gained by better insulation in industry. In 1990, the U.S. industrial sector used 25,000 trillion BTUs of fuel and electricity. That unfathomable figure amounts to about 30 percent of all energy consumed.

The TIMA Commercial and Industrial Committee commissioned a study by RCG/Hagler, Bailly, Inc. an energy research firm based in Philadelphia -- in conjunction with Dr. Harry L. Brown of Drexel University [Appendix D]. The study which was recently completed demonstrates the great opportunity for energy conservation that exists within industry. The study found some remarkable things. For example:

- There are 132,000 miles of steam and process piping in U.S. industry that are uninsulated. That is enough piping to encircle the globe more than five times.
- There are 94 million square feet of non-piping surface areas -- bare boilers, bare furnace equipment, bare steam equipment, bare ducts, etc. -- that are uninsulated. That is equivalent to the area of more than 2,600 football fields.

If these bare and underinsulated piping and surface areas were insulated to the most cost-effective thicknesses, the country could save the equivalent of 204 million barrels of oil a year. By insulating bare surfaces and upgrading existing insulation, industry can save close to \$3.6 billion per year based on a conservative composite fuel cost of \$18 per barrel of oil. The installation cost for insulating just the bare surfaces is \$1.65 billion -- which means payback would occur within six months, an incredible return on investment.

It is clear that American industry can profit from retrofitting its existing insulation and insulating uninsulated piping and surfaces. The results will not only save fuel and reduce air-pollutant emissions, but will save dollars and reduce U.S. reliance on imported oil.

Energy lost before performing its intended use represents waste. The development of guidelines for industrial plants, insulation-audit procedures to identify waste and proper installation of insulation are necessary to improve the efficiency of American industries.

As part of the solution, MIMA wholeheartedly supports this provision.

SECTION 3001 [d]-- SPECIFYING THE 1989 CABO MEC AS THE MINIMUM ENERGY-EFFICIENCY LEVELS FOR HOMES

MIMA urges the committee to modify Section 3001 [d], so that it references the 1989 CABO MEC as the minimum energy-efficiency levels for new homes and the ASHRAE Standard 90.1 as the minimum energy-efficiency level for commercial buildings and high-rise residential buildings.

MIMA urges the committee to modify (Section 3001[d]) so that it does not strike Section 109 of the Cranston-Gonzalez National Affordable Housing Act (Public Law 101-625). Section 109 directs the Secretary of HUD to promulgate energy efficient standards for new construction of public and assisted housing and residential housing (other than manufactured homes) subject to mortgages under the National Housing Act. Section 109 also directs these standards to meet or exceed the provisions of the most recent edition of the 1989 CABO MEC.

In addition to the Battelle and DOE study mentioned earlier, another study [Appendix E] recently completed by RCG/Hagler, Bailly, Inc. in conjunction with Dr. Harry Brown of Drexel University, provides new compelling and corroborating evidence that the 1989 MEC is a cost-effective standard which provides significant savings.

RCG/Hagler, Bailly, Inc. Study

According to this study, if the insulation levels recommended by the 1989 CABO MEC were used in all American homes, the country would save 2,130 trillion BTUs of energy, save \$5.8 billion on oil and reduce air-pollutant emissions by 155 million tons every year (based on an oil price of \$18 a barrel).

The study was designed to determine the energy savings that would result if all U.S. homes were insulated according to the recommendations of the 1989 MEC. The study examined homes from the perspective of three different levels of insulation -- no insulation, existing levels of insulation and insulation levels recommended by the 1989 MEC.

It focused on homes located within the 20 largest U.S. population centers. The 20 population centers selected fell within nine U.S. Census Bureau regions, which together represented a wide diversity of climates. For each of the census regions, the researchers obtained a variety of physical and geographical data on four different types of homes -- detached single-family homes, attached single-family homes, apartments and mobile homes.

A sophisticated computer program -- called EUTAP (End-Use Technologies Application Procedures) -- calculated the effects of differing levels of insulation on energy costs and energy usage. EUTAP was developed by RCG/Hagler, Bailly, Inc.

EUTAP can calculate the incremental energy-use and economic impacts of substituting different building-design changes -- such as different insulation levels -- in any building type. The program incorporates a building energy-evaluation model that uses hourly data for one characteristic day each month as the basis for calculating hour-by-hour energy demands and annual energy use. Each month is represented by an "operational day" and a "nonoperational day," each represented by 24-hour profiles of occupancy, equipment use and natural weather conditions. This approach offers a much more accurate calculation of energy use than can be obtained by using monthly degree-days.

Energy Savings

The study found that existing insulation saves the country a significant amount of energy already. American homes currently account for about 12½ percent of all energy used; the study found that, without insulation, the energy use of homes would more than double.

If homes were insulated to the levels recommended by the 1989 MEC, the cost and energy savings would be even greater, according to the study. Using 1989 MEC insulation levels in all detached single-family homes would save the country 1,854 trillion BTUs of energy per year. For all attached single-family homes, the country could save 66 trillion BTUs; for all apartments, 128 trillion; and for all mobile homes, 80 trillion BTUs. The total energy savings for all four kinds of homes examined in the study would amount to 2,130 trillion BTUs a year. That is equivalent to reducing the amount of energy currently used to heat and cool American homes by close to 10 percent.

Other Savings

The study found the country would realize a significant reduction in air pollution emissions. According to the study, using 1989 MEC insulation levels would reduce harmful emissions by 155 million tons. The vast majority of the emissions saved by code would be carbon dioxide, the chief gas responsible for ozone depletion and global warming. Another indirect measurement of the environmental benefit would be that the reduced energy need translates into the equivalent of 280 fewer oil supertankers.

The study results are only the latest in a growing stack of scientific evidence that supports adoption of the 1989 MEC as the best and most cost-effective choice for minimum energy-efficiency levels for new homes.

**PROPOSED NEW S. 341 SECTION -- REQUIRING DOE TO OFFER GRANTS
FOR TRAINING FOR STATES IN
ADOPTING THE 1989 CABO MEC**

Finally, MIMA asks the committee to consider adding another provision to the bill which authorizes DOE to provide various grants to support energy-efficiency measures on the part of states and local jurisdictions which have adopted energy codes that are equal to or greater than the 1989 CABO MEC (for homes) and ASHRAE Standard 90.1 (for commercial and high-rise multifamily residential buildings).

The training and technical assistance provided by DOE should be directed to programs that provide training for code inspectors, building designers and others involved in energy code implementation.

**PROPOSED NEW S. 341 SECTION -- ENCOURAGING THE DEVELOPMENT OF
ENERGY-EFFICIENCY MORTGAGES FOR
HOMES THAT MEET THE 1989 CABO MEC**

MIMA encourages the committee to add a provision that would encourage the development of energy-efficient mortgages for homes built to the specifications of the 1989 CABO MEC from the secondary mortgage programs of the Federal National Mortgage Association (FNMA) and the Federal Home Loan Mortgage Corporation (FHLMC).

Currently, many lenders don't give purchasers of energy-efficient homes credit for their lower total housing expenses. If lenders routinely included projected energy costs (E) along with principle, interest, taxes and insurance expenses (PITI) when calculating a purchaser's monthly housing payment-to-income ratio, lenders would have a more accurate assessment of a family's ability to afford the home they were planning to purchase. In addition, families who had lower monthly utility expenses and lower total PITIE expenses could either purchase the same home with less income or could afford, with the same income, to purchase a more expensive home.

Unfortunately, while FHA, VA, FNMA and FHLMC all support the idea of an energy-efficient mortgage and they all have policies intended to favor energy-efficient homes, each agency or secondary market entity uses a different method to determine the characteristics of an energy-efficient home, a different system to recognize energy savings, and a different time frame for making energy-related decisions. The result is that lenders remain as confused as builders and borrowers, and rarely encourage homeowners to take advantage of these programs. The regulatory barriers here are the duplicative and conflicting guidelines.

The committee could substantially advance the effort to finance energy-efficient homes by encouraging the major governmental agencies and federally chartered secondary market entities to develop a consensus on the underwriting guidelines, energy-efficient criteria and approval procedures for financing an energy-efficient home. Key among these requirements should be that the home be built according to the specifications of the 1989 MEC.

In convening this effort, the committee should include the Office of Thrift Supervision and the Federal Deposit Insurance Corporation. As sensitive as these agencies are to prudent underwriting practices by lending institutions, they should be included in developing this consensus program so they can encourage -- and will not inadvertently penalize -- lending institutions that provide reasonable flexibility in the underwriting of energy-efficient mortgages.

**PROPOSED NEW S. 341 SECTION -- IMPROVING ENERGY-EFFICIENCY
STANDARDS FOR MOBILE/
MANUFACTURED HOMES**

MIMA also encourages the committee to add language to S. 341 to encourage HUD to update thermal standards for manufactured housing as required by Section 568 of the Housing Community Development Act of 1987 (Public Law 100-242). This act directed HUD to modify the manufactured home standards to create "cost-effective energy conservation performance standards designed to ensure the lowest total of construction and operating costs."

In 1974, the federal government preempted states' authority over regulating the construction of mobile/manufactured homes. Within a year, the federal government issued a construction standard that included energy-conservation requirements that had little sensitivity to the impact geography had on heating and cooling needs.

The standards, which have not been changed in 15 years, divided the country into two zones, cutting across the center of the country following state lines. Early in 1988, federal law was changed and Section 568 of the Housing and Community Development Act of 1987 (Public Law 100-242) directed HUD to modify the manufactured-home standards to create "cost-effective energy conservation performance standards designed to ensure the lowest total of construction and operating costs."

According to a 1988 DOE Study ("Impacts of Alternative Residential -- Rural Housing Amendments Study"), it was cost effective from a life-cycle perspective to impose on manufactured homes the same energy-conservation standards that the FmHA imposes on stock-built housing.

In spite of this study, which indicated HUD's manufactured-housing standards resulted in higher life-cycle costs than the FmHA Title V standards (which FmHA applies to all manufactured homes it finances), and in spite of Congress' clear directive to HUD to create life-cycle cost-effective standards for manufactured housing, HUD has not modified its standards. As a result, many manufactured homes are built to woefully inadequate energy-efficiency standards; homeowners and renters end up paying exorbitant utility bills, some higher than their mortgage payments.

In determining how to reduce the regional demand for power, the Northwest Power Planning Council (NPPC) conducted an analysis of construction changes to manufactured homes that were life-cycle cost-effective. The NPPC determined that manufactured homeowners would save sufficient money through reduced utility usage to justify changing the manufactured-housing insulation standard from R-11 to R-33 or R-38 in the ceiling, from R-11 to R-19 in the walls and from R-7 to R-22 in the floors. The NPPC recently completed a study that monitored the energy use of 150 manufactured homes built to their increased Model Conservation Standards. The results clearly justify the call for improved conservation standards.

Manufactured homes, which are often cited as an affordable housing alternative because their purchase price can be as low as \$12,000-\$25,000, are not affordable if the utility bills are uncontrollable due to energy inefficient design and construction.

This committee can help prevent such problems in the future by issuing life-cycle, cost-effective energy performance construction standards for manufactured housing as part of S. 341. These standards should be sensitive to differences in climate as well as regional utility costs. A number of states, including California and Texas, contain wide variations in temperature which should be reflected by the adoption of standards that recognize -- as the 1989 MEC does -- the need for different energy-conserving requirements in different areas of such states.

In fact, as revealed in the 1988 DOE Rural Amendments Study, since it is cost-effective to home purchasers, manufactured housing should meet the same energy-conservation standards as stock-built housing, namely the most current version of the CABO MEC.

CONCLUSION -- MIMA SUPPORTS THREE KEY PROVISIONS, ENCOURAGES REVISION, ADOPTION OF THREE OTHERS

In conclusion, then, MIMA wholeheartedly supports Sections 3001 (with improvements), 3002, 3003 and 3005 of the National Energy Security Act of 1991.

MIMA urges the committee to revise Section 3001 [d] so as not to strike Section 109 of the Cranston-Gonzalez National Affordable Housing Act (Public Law 101-625) to specify the 1989 MEC as the minimum energy-efficiency levels for new homes.

And finally, MIMA asks the committee to consider amending the bill to include updated energy-efficiency requirements for mobile homes; and to offer a DOE-grant-funded training and technical assistance program for states interested in adopting residential energy codes equal to or greater than the 1989 MEC.

MIMA appreciates the opportunity to have shared its comments with the committee.

Senator WIRTH. Thank you very much, Mr. Lach.
Mr. Jelin.

STATEMENT OF WILLIAM JELIN, PRESIDENT, NRG BARRIERS, INC., ON BEHALF OF THE POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION

Mr. JELIN. Mr. Chairman, my name is William Jelin, and I am founder, CEO and president of NRG Barriers. I am also a founder and a member of the executive board of the Polyisocyanurate Manufacturers Association, on whose behalf I am testifying today.

Senator WIRTH. That is foam?

Mr. JELIN. Foam. I live in a small fishing village on the coast of Maine that no one ever heard of until 2 years ago. Its name is Kennebunkport. I have a small day-sailer, which is docked at one of the marinas on the river. As the ice recedes from the ponds, fantasies begin about riding my bike down to the marina, hoisting the sails, and harnessing the renewable wind current caused by the temperature differential of the land mass and the rather frigid Maine waters.

Only one thing interrupts this idyllic scene. The slip next to mine is occupied by a 26-foot speedboat named *Fidelity*. This boat has two large outboard motors and never leaves the dock without a flotilla of other multi-engine boats. The noise, the smoke, the waves, the fumes should buy something more for the owners of these gas-guzzling vehicles than my pristine, wind-driven boat provides me.

But no, these cigarette boats rarely go further off the coast than my little day sailer. Why does this man in the big blue boat named *Fidelity* not take advantage of the natural energy source that blows by his wind-swept home each day? Guys around the marina claim the big man has been known to grumble, "we should have enough energy to recreate."

Well, back to the reality of the marketplace. We are here in Washington, and we are discussing America's energy future.

Senator WIRTH. What is the answer to your question, Mr. Jelin?
[Laughter.]

Mr. JELIN. It is my feeling he should sail more. Our product, urethane foam insulation board, is the most energy efficient product known to man. It truly represents the state of the art in energy efficiency. For that reason, the market place gives our product a 60 percent share of commercial construction insulation, and a 50 percent or residential construction.

As a result, our contribution to the made-in-America energy policy is phenomenal. The Department of Energy figures suggest that each year's production of our product of rigid foam will save approximately 60 million barrels of oil—60 million barrels of oil—1 month's production of Kuwait for July, 20 days of fire for Kuwait in March.

Your hearing this afternoon focuses narrowly upon the role of building standards in achieving energy insulation. Given the fact that residential and commercial buildings consume approximately 35 percent of our Nation's energy, it is appropriate that your subcommittee begin its review of energy efficiency on this subject.

Senator Wirth, during your questioning of Assistant Secretary Davis at the full committee hearing on February 26, you zeroed on the central conundrum facing policy makers. Can you achieve advances in energy efficiency in the building sector by simply allowing market forces to work, when those market forces are dominated by the desire to hold down front-end costs?

We think the answer is obviously no, and support what we perceive to be your desire to address this fundamental barrier to enhance energy efficiency. In our view, there is no one way to overcome market barriers to energy efficient buildings. Rather, the best policy would be to reflect a mix of approaches, including adopting a strong minimum, national standard, applying those standards to Federal buildings and, to the extent possible, buildings which utilize federally guaranteed mortgages.

Encouraging States to adopt the codes that equal or exceed these minimum standards by encouraging energy grants to States that exceed the minimums, and conversely increasing State grants to those States that fall below minimal Federal guidelines.

Providing economic incentives either from taxpayer or ratepayers for builders to use construction methods that result in energy savings in excess of those that would have been saved by simply meeting the appropriate energy standards.

Finally, ensuring that homeowners are provided accurate information regarding the energy efficiency of their homes, that the financial community take energy efficiency into account in making loans.

S. 341 makes important strides in achieving this mix, and we support the bill on that basis. We do believe, however, that the measure could be strengthened consistent with good sense. One short suggestion that we have discussed with your staff is the requirement that Federal building standards that have been developed pursuant to S. 304 of the Energy Conservation and Production Act should reflect and promote appropriate industry-adopted standards.

I see lights going off, so I will finish up. Finally, we believe it is appropriate for your committee to consider economic incentives, both for States and private building sectors, to meet or exceed the minimum standards. While tax issues in particular are obviously not matters within this committee's jurisdiction, it is certainly an issue which should be considered at the appropriate point.

Mr. Chairman, thank you for the opportunity to testify.

[The prepared statement of Mr. Jelin follows:]



Polyisocyanurate Insulation Manufacturers Association

**TESTIMONY OF WILLIAM JELIN
President, NRG Barriers, Inc.**

on behalf of

THE POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION

Before the

**SUBCOMMITTEE ON ENERGY REGULATION AND CONSERVATION
SENATE ENERGY AND NATURAL RESOURCES COMMITTEE
UNITED STATES SENATE**

**Re: S. 341 and The Role of Building
Standards in Promoting Energy Efficiency**

March 19, 1991

1001 Pennsylvania Avenue N.W. • 5th Floor • Washington, D.C. 20004
(202) 624-2709, Fax (202) 628-3856

SUBCOMMITTEE CHAIRMAN WIRTH, MEMBERS OF THE SUBCOMMITTEE, I AM WILLIAM JELIN, PRESIDENT OF NRG BARRIERS, INC., AND A MEMBER OF THE EXECUTIVE BOARD OF THE POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION (PIMA), ON WHOSE BEHALF I AM TESTIFYING TODAY. WE ARE VERY GRATEFUL TO YOU AND YOUR STAFF FOR THE OPPORTUNITY TO ADDRESS YOU THIS AFTERNOON. CONSISTENT WITH OUR UNDERSTANDING OF THE TIME CONSTRAINTS THAT EVERYONE IS OPERATING UNDER, OUR COMMENTS WILL BE BRIEF.

BY WAY OF INTRODUCTION, PIMA'S MEMBERS, SEVERAL OF WHOM HAVE FACILITIES IN COLORADO, ARE MANUFACTURERS OF ONE OF THE MOST EFFECTIVE FORMS OF INSULATION AVAILABLE FOR RESIDENTIAL AND COMMERCIAL APPLICATIONS. OUR RIGID FOAM INSULATION BOARD, WHICH YOU SHOULD HAVE NEXT TO YOU, REPRESENTS THE STATE OF THE ART IN TERMS OF ENERGY EFFICIENCY, WHICH IS A SIGNIFICANT REASON WHY OUR PRODUCT IS USED IN OVER 60 PERCENT OF NEW COMMERCIAL CONSTRUCTION AND APPROXIMATELY 50 PERCENT OF RESIDENTIAL CONSTRUCTION. AS A RESULT, OUR CONTRIBUTION TO A "MADE-IN-AMERICA" ENERGY POLICY IS SUBSTANTIAL. DOE FIGURES SUGGEST THAT OUR PRODUCT'S SUPERIOR ENERGY EFFICIENCY ATTRIBUTES WILL SAVE APPROXIMATELY 60 MILLION BARRELS OF OIL IN COMMERCIAL AND RESIDENTIAL BUILDINGS OVER THEIR LIVES, 60 MILLION

BARRELS MORE THAN WHAT WOULD BE SAVED WITH LESS EFFICIENT MEASURES.

LESS THAN A MONTH AGO, THE FULL COMMITTEE HEARD TESTIMONY ON THE ENERGY EFFICIENCY AND RENEWABLE PROVISIONS CONTAINED IN S.341. ONLY DAYS BEFORE THAT HEARING, OUR NATION HAD COMMITTED IT'S GROUND FORCES TO ACTION IN THE GULF, A WAR WHICH CHAIRMAN JOHNSTON CHARACTERIZED AS A WAR OVER ENERGY. SINCE THEN, WE HAVE EXULTED IN OUR GOOD FORTUNE AND THE EXCELLENT MILITARY PREPAREDNESS AND EXECUTION THAT PRODUCED VICTORY AT THE COST OF PRECIOUS FEW AMERICAN LIVES.

HOWEVER, OUR VICTORY CAN NOT NOW BLIND US TO THE UNDERLYING REALITY THAT WE WENT TO WAR OVER ENERGY AND THAT LIVES WERE LOST FIGHTING OVER ENERGY. AT THE VERY LEAST, WE OWE IT TO THOSE WHO MADE THE ULTIMATE SACRIFICE TO BE SURE THAT HISTORY DOES NOT NEEDLESSLY REPEAT ITSELF. IF ENERGY IS INDEED WORTH DYING FOR, WE OWE IT TO OURSELVES TO BE SURE THAT WE ARE USING IT IN THE MOST EFFICIENT MANNER POSSIBLE.

AT THE CLOSE OF THAT HEARING, CHAIRMAN JOHNSTON INDICATED THAT IT WAS HIS DESIRE TO PRODUCE AS "STRONG" A BILL AS HE COULD "CONSISTENT WITH GOOD SENSE". WE SHARE THAT DESIRE.

YOUR HEARING THIS AFTERNOON FOCUSES MORE NARROWLY UPON THE ROLE OF BUILDING STANDARDS IN ACHIEVING ENERGY EFFICIENCY. GIVEN THE FACT THAT RESIDENTIAL AND COMMERCIAL BUILDINGS CONSUME APPROXIMATELY 35% OF OUR NATION'S ENERGY, IT IS APPROPRIATE THAT YOUR SUBCOMMITTEE BEGIN ITS REVIEW OF ENERGY EFFICIENCY ISSUES WITH THIS SUBJECT.

SENATOR WIRTH, DURING YOUR QUESTIONING OF ASSISTANT SECRETARY DAVIS AT THE FULL COMMITTEE HEARING ON FEBRUARY 26TH, YOU ZEROED IN ON THE CENTRAL CONUNDRUM CONFRONTING POLICY MAKERS: CAN YOU ACHIEVE SIGNIFICANT ADVANCES IN ENERGY EFFICIENCY IN THE BUILDING SECTOR BY SIMPLY ALLOWING MARKET FORCES TO WORK, WHEN THOSE MARKET FORCES ARE DOMINATED BY THE DESIRE TO HOLD DOWN FRONT-END COSTS? WE THINK THE ANSWER IS OBVIOUSLY NO. WE SUPPORT WHAT WE PERCEIVE TO BE YOUR DESIRE TO ADDRESS THIS FUNDAMENTAL BARRIER TO ENHANCED ENERGY EFFICIENCY.

IN OUR VIEW, THERE IS NO ONE WAY TO OVERCOME THIS MARKET BARRIER TO ENERGY EFFICIENT BUILDINGS. RATHER, THE BEST POLICY WOULD REFLECT A MIX OF APPROACHES, INCLUDING:

- ADOPTING STRONG MINIMUM NATIONAL STANDARDS;

- APPLYING THOSE STANDARDS TO FEDERAL BUILDINGS AND, TO THE EXTENT POSSIBLE, BUILDINGS WHICH UTILIZE FEDERALLY GUARANTEED MORTGAGES;
- ENCOURAGING STATES TO ADOPT CODES THAT EQUAL OR EXCEED THESE MINIMUM STANDARDS BY INCREASING ENERGY GRANTS TO STATES THAT EXCEED THE MINIMUMS AND, CONVERSELY, DECREASING STATE GRANTS TO THOSE STATES THAT FALL BELOW THE MINIMUM FEDERAL GUIDELINES;
- PROVIDING ECONOMIC INCENTIVES, EITHER FROM TAXPAYERS OR RATEPAYERS, FOR BUILDERS TO USE CONSTRUCTION METHODS THAT RESULT IN ENERGY SAVINGS IN EXCESS OF THOSE THAT WOULD HAVE BEEN SAVED BY SIMPLY MEETING THE APPROPRIATE ENERGY EFFICIENCY STANDARD; AND
- ENSURING THAT HOME OWNERS ARE PROVIDED ACCURATE INFORMATION REGARDING THE ENERGY EFFICIENCY OF THEIR HOMES, AND THAT THE FINANCIAL COMMUNITY TAKES ENERGY EFFICIENCY INTO ACCOUNT IN MAKING LOANS.

S. 341 MAKES IMPORTANT STRIDES IN ACHIEVING THIS MIX AND WE SUPPORT THE BILL ON THAT BASIS. WE DO BELIEVE, HOWEVER, THAT THE MEASURE COULD BE STRENGTHENED "CONSISTENT WITH GOOD SENSE".

ONE SUGGESTION THAT WE HAVE DISCUSSED WITH YOUR STAFF IS A REQUIREMENT THAT THE FEDERAL BUILDING STANDARDS THAT HAVE BEEN DEVELOPED PURSUANT TO SECTION 304 OF THE ENERGY CONSERVATION AND PRODUCTION ACT SHOULD REFLECT AND PROMOTE APPROPRIATE INDUSTRY-ADOPTED STANDARDS. IN THE CASE OF RESIDENTIAL BUILDINGS, THE MODEL ENERGY CODE OF THE COUNCIL OF AMERICAN BUILDING OFFICIALS (CABOMEC) SHOULD BE ADOPTED AS THE MINIMUM. THE INDUSTRY STANDARDS FOR COMMERCIAL BUILDINGS AS REFLECTED BY THE MOST RECENT STANDARDS ADOPTED BY THE AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS (ASHRAE), SHOULD BE THE BASIS FOR THE MINIMUM NATIONAL STANDARDS. THE STANDARDS THAT DOE HAVE DEVELOPED ARE, IN OUR JUDGEMENT, AT BEST IRRELEVANT, AND AT WORST, COUNTERPRODUCTIVE. OUR MEMBERS, WHO HAVE BEEN ACTIVE IN THIS AREA FOR YEARS, WERE NOT EVEN AWARE OF THEM IN MANY INSTANCES, AND THE EFFORT, PARTICULARLY WITH RESPECT TO THE RESIDENTIAL STANDARDS, SEEMS TO BE MORE APPROPRIATE FOR COMPUTER WIZARDS THAN CODE OFFICIALS.

S. 341 REQUIRES THAT THE FEDERAL STANDARDS ARE MADE APPLICABLE TO PUBLIC HOUSING IN ADDITION TO FEDERAL BUILDINGS. PIMA SUGGESTS THAT THE COMMITTEE CONSIDER WHETHER THESE STANDARDS SHOULD BE MADE APPLICABLE MORE BROADLY, PERHAPS INCLUDING BUILDINGS CONSTRUCTED WITH FEDERALLY GUARANTEED

MORTGAGES. SUCH A PROVISION WOULD APPEAR TO BE CONSISTENT WITH THE DEPARTMENT OF ENERGY'S RECOMMENDATION, BASED ON ASSISTANT SECRETARY DAVIS' TESTIMONY LAST MONTH.

FINALLY, WE BELIEVE IT IS APPROPRIATE FOR THE COMMITTEE TO CONSIDER ECONOMIC INCENTIVES, BOTH FOR STATES AND PRIVATE SECTOR BUILDERS, TO MEET AND EXCEED EITHER THE MINIMUM FEDERAL STANDARDS OR THE STATE STANDARD, WHICHEVER IS GREATER. WHILE TAX ISSUES ARE OBVIOUSLY NOT MATTERS WITHIN THIS COMMITTEE'S JURISDICTION, THEY CERTAINLY SHOULD BE CONSIDERED AT THE APPROPRIATE POINT IN THE LEGISLATIVE PROCESS.

MR. CHAIRMAN, AS I HAVE INDICATED, PIMA HAS MET WITH YOUR VERY ABLE STAFF AND DISCUSSED OUR RECOMMENDATIONS. WE LOOK FORWARD TO CONTINUING TO WORK WITH YOU AS YOU DEVELOPE YOUR OWN LEGISLATION AND ANY AMENDMENTS YOU MAY SEEK TO OFFER TO S. 341.

THANK YOU AGAIN FOR ASKING US TO PARTICIPATE IN THIS HEARING.

Senator WIRTH. Thank you, Mr. Jelin. You mentioned, and I want to just ask you to expand on this for a second before Mr. Buchert comes on. What are three incentives for homebuilders? You made reference in your testimony that we ought to provide incentives for homebuilders. What are the three most important?

Mr. JELIN. Well, our staff has a couple of them. I think, one of the most important, we thought, was the mortgage.

Senator WIRTH. That goes back to what Mr. Lach said. What is the second one?

Mr. JELIN. If you can wait, I can give it to the committee in writing.

Senator WIRTH. I just wanted to know if Mr. Buchert wanted to respond. He is in the homebuilding industry.

Sir, you may proceed, Mr. Buchert.

**STATEMENT OF JAY BUCHERT, FIRST VICE PRESIDENT,
NATIONAL ASSOCIATION OF HOME BUILDERS**

Mr. BUCHERT. Mr. Chairman, my name is Jay Buchert. I am a home builder from Cincinnati, Ohio, and I am first vice president of the National Association of Home Builders.

Since 20 percent of the Nation's energy use goes toward residential housing, therefore, there is a role for home builders and for home owners in energy conservation. NAHB believes that any conservation plan for the residential sector should incorporate three elements.

First, energy efficient mortgages. Second, advances housing technology research. And, third, energy performance targets.

First, the proposal should result in substantial energy savings, both to the home owner and to the Nation.

Second, the proposal should minimize administrative requirements. In other words, this proposal should be as self-executing as possible through an existing structure, such as the building codes process.

Third, the result has to be affordable for the home buyer. No proposal should force choices that are not in the buyer's own interest.

A key feature in the NAHB energy proposal is the availability of energy efficient mortgages. Energy efficient mortgages kill two birds with one stone by addressing energy conservation and housing affordability. By recognizing the built-in potential of lower housing operational costs up front, the energy efficient mortgages allow stretches in loan qualification ratios so that more people can qualify for mortgages.

I will concentrate on the codes application, rather than NAHB's energy proposal. The model energy code is the primary energy standard that has been proposed for adoption to residential construction. NAHB would like the MEC to the base level for the NAHB energy proposal. The code consistently provides a level of insulation that requires an energy efficient building envelope at a cost that is economically justified.

However, we are also aware that all codes need refinement as time progresses, and NAHB will work within the code process to incorporate changes as necessary. In addition, our goal is to use the NAHB energy proposal as a means to develop new energy designs

that could go beyond the code. These designs would utilize new technology, increase the energy savings of the home, and, in turn, provide the builder and the home buyers with incentives that would make the program work on a voluntary basis as we have done previously with the NAHB thermal performance guidelines, which are now widely accepted.

As the chairman knows, NAHB consistently opposed a mandatory energy efficient rating system. Both the chairman's bill and the bill sponsored by Senator Johnston and Senator Wallop are identical in that they direct the Secretaries of DOE and HUD to promulgate guidelines for State adoption of numerically energy efficient rating systems for all homes.

NAHB's concern is that these two approaches initially provide for voluntary standards, but leave the implementation discretionary with the states. NAHB views this provision as an invitation to a State-by-State mandatory home efficiency rating system. NAHB believes that the preferable approach would be to work through an already established workable system such as the adoption of the MEC, which is uniform, less cumbersome, and less expensive.

NAHB could support a voluntary home energy rating system used in conjunction with the MEC, to the extent that its use contributed to energy efficiency improvements for homes. It is not clear that a rating system program, in and of itself, would achieve any greater efficiencies but, instead, would only be an additional cost of rating homes.

Ideally, the goal of the rating system should be to encourage energy efficiency upgrades in existing housing, and make new construction more efficient, where size and preference make a difference.

Using the rating program merely as a consumer shopping comparison tool will have the negative effect of devaluing the less efficient housing and leaving the lush efficient housing to those who can least afford the higher energy bills. If a home energy rating system is adopted in legislation it is important that it be a voluntary system that avoids these negative effects.

We believe our NAHB energy proposal accomplishes the same objective as the Senator's proposal, but takes a different approach. As mentioned earlier, our proposal assumes the builder's compliance with upgraded energy efficiency standards through the MEC. Using that as a base, with initial mortgage incentives, an additional incremental efficiencies above the MEC will be labeled as such and rewarded by greater mortgage and utility incentives. Here the builder's interest and the public's interest coincide.

In conclusion, I want to reiterate our interest in working with the committee to reach a reasonable solution to energy efficiency. NAHB believes that a combination of the model energy code and energy efficient mortgages as a base, used in conjunction with a system of further incentives based on home size and personal preference, is more responsive to the marketplace and will ultimately accomplish our mutual objective: greater energy savings.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Buchert follows:]

STATEMENT

of

THE NATIONAL ASSOCIATION OF HOME BUILDERS

before the

SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

SUBCOMMITTEE ON ENERGY REGULATION AND CONSERVATION

on

ENERGY EFFICIENCY STANDARDS AND RATINGS

MARCH 19, 1991

Mr. Chairman and Members of the Subcommittee:

My name is Jay Buchert. I am a builder from Cincinnati, Ohio, President of American Heritage Construction and Development Corporation and First Vice President of the National Association of Home Builders (NAHB). I appreciate the opportunity to testify before you today and represent our membership of over 157,000 firms.

I will begin my testimony by describing NAHB's past record on developing energy efficient construction techniques and the policy considerations which led to the development of our Energy Proposal. The second section will include a more in depth discussion of NAHB's Energy Proposal and its components, to be followed by a section dealing with our experience with the CABO Model Energy Code. The final portion of my statement will be directed to legislation which has been introduced in the Senate and House of Representatives.

But first, I would be remiss if I did not commend the Senators for their efforts. In addressing our nation's energy policy in such a comprehensive fashion, you have taken on an extremely ambitious task. I applaud the Senators for all the time you have devoted to this issue, today's hearing being an example. Your legislation is timely. If we have learned nothing else from the turn of events in the Middle East, it is that our national energy policy has far reaching repercussions on all aspects of American life. I know that members of the Committee, the Chairman in particular, recognize that energy conservation is a vital component of any national strategy. The Chairman's bill and S. 341, sponsored by Senator Bennett Johnston and Senator Malcolm Wallop, both recognize a role for energy conservation in the residential sector. NAHB supports, in principle, many of the provisions contained in these bills, notably the voluntary energy ratings system tied to energy efficient mortgages, and the uniform labeling requirements for windows, window systems, lamps and luminaires.

I. NAHB Past Experience

Recognizing that one-fifth of our nation's energy use is attributable to the residential sector, NAHB acknowledges its role in energy conservation. NAHB has accepted this challenge by initiating innovative energy efficient construction techniques. NAHB and the NAHB Research Center, a not-for-profit subsidiary corporation, have made significant contributions to research and development of energy-savings technologies and products for the home. NAHB's Research Center has performed cooperative research

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and studies with industry, and universities nationwide, and prepared numerous educational materials and manuals for home builders and home buyers. The NAHB Research Center has developed and promoted voluntary energy conservation guidelines, which have been widely accepted. Over the years, we have built a series of prototype energy efficient residences and developed monitoring and measuring techniques for determining the contribution to passive solar designs and related energy conservation and renewable resources. In short, for nearly 30 years, NAHB and the NAHB Research Center have been in the forefront of assisting the building industry in producing more cost-effective, energy efficient homes and apartments.

- In the early 1970's energy codes were a new requirement in building codes and a new experience to the home builder. However, our membership accepted the challenge and began working on the national and local level to develop standards that met or exceeded code requirements. The basis for this was the NAHB Thermal Performance Guidelines (TPGs). These guidelines, which were more restrictive than the code requirements, became the basis for many local energy programs which the builders joined to gain recognition for the upgraded energy packages they were incorporating into their homes. The TPGs paved the way for the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation to develop energy efficient mortgages. NAHB believes that our membership and industry will again respond to the energy concerns of this country in the manner that they have in the past. Our members have studied the market conditions on the local level, looked at the recommendations from the regional and national level, and developed energy savings programs that have gone beyond the required code levels. It is significant that this was completed entirely on a voluntary basis.

Utilizing the knowledge gained through research, NAHB has developed its own Energy Proposal. NAHB's Energy Proposal for energy efficient homes addresses two policy issues. Those issues are: energy conservation and environmental concerns, and housing affordability.

Of primary importance is energy conservation. I feel safe in saying that members of this Committee and our nation as a whole are concerned over oil imports, power plant emissions, utility capacity shortfalls and potential global warming. To the extent the housing sector can contribute to minimizing these problems, the home builders want to be at the forefront of the effort.

Of similar importance is housing affordability since this issue affects not only prospective home buyers and builders, but it has a ripple effect throughout the economy. It is undeniable

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that personal income levels have not kept pace with the rising costs surrounding the production of housing, contributing to a growing homeless population and declining numbers of new home purchases by young families. The affordability issue is complex and one that has many different variables. Some of those variables are within our ability to control, such as the cost of heating and cooling a home. To the extent that the operational cost of housing declines, more individuals can qualify for residential mortgages. Energy efficient home mortgages would increase the number of individuals who qualify for home purchases through a recognized savings from increased energy efficiency.

II. The NAHB Energy Proposal

In order for any proposal to be accepted by the industry and meet the needs of the American home buyers, it must satisfy certain criteria. First, the proposal should result in substantial energy savings both to the home owner and to the nation. Second, the proposal should minimize administrative requirements. In other words the proposal should be as self-executing as possible through an existing structure such as the building code process. Third, the result has to be affordable for the home buyer. No proposal should force choices that are not in the buyers' own interests. Finally, the Proposal must simplify the task of introducing affordable, new energy technologies.

The NAHB Proposal is well along in its development and will be reviewed by our elected leadership at the Association's May Board of Directors meeting. Let me now touch on several key features of the NAHB Proposal.

A. Energy Efficient Mortgages

A key feature of the NAHB Energy Proposal is the availability of energy efficient mortgages. The problem is very simple. Increasing the energy efficiency of homes saves energy costs in the future, but inevitably costs money today. Extra costs mean higher selling prices. Higher selling prices mean fewer potential buyers can qualify to buy new energy efficient homes. The result is new homes are less affordable than before. Heightened energy efficient standards could hurt affordability.

Energy efficient mortgages address the energy problem and the affordability problem in one step. They provide buyers with access to the extra disposable income they need to buy an energy-efficient new home, by offering increases or 'stretches' in the loan qualification ratios of up to 4 points for mortgage payment-to-income and total debt-to-income. This is sound underwriting.

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Owners of energy efficient houses will spend a smaller percentage of their incomes on energy, leaving more available to meet mortgage and other debt obligations.

Energy efficient mortgages were designed over a decade ago, but have yet to account for more than a tiny fraction of loan originations due to inconsistent requirements and costs associated with paperwork burdens. Section 946 of the Cranston-Gonzalez National Affordable Housing Act calls for creation of a federal task force and development by HUD, within two years, of a uniform plan for making housing more affordable through mortgage financing incentives for energy efficiency. NAHB supports such a process, but believes that it can be done easier and more quickly. Houses that are built to adopted model energy codes should receive energy efficient mortgages and we intend to work with Fannie Mae and Freddie Mac to bring this about.

B. Energy Performance Targets

Target energy levels are also key to the Proposal. The Proposal would build on the energy levels found in the Model Energy Code (MEC) published by the Council of American Building Officials. The MEC standards have been carefully developed in recent years and represent a consensus as to cost effective codes.

We want to encourage greater achievements in energy efficient construction. However, we do not want to force families to make decisions contrary to their own economic interests. Our national experience with voluntary energy conserving designs and marketplace incentives is that many builders and home buyers do respond to incentives and buy more energy efficient homes.

The NAHB Proposal establishes enhanced energy levels and could provide a variety of incentives, to include additional energy efficient mortgages and utility program support, as means of inducing purchasers and builders to reach these higher levels of energy efficiency. Through careful selection of these higher energy levels and coupling them to even greater incentives, home purchasers will be able to select energy efficient designs consistent with their home size, life style and budget preferences.

C. Advanced Housing Technology

One way to encourage energy efficiency is to reduce its cost. Over time, the best way to lower cost may be through accelerated introduction and adoption of advanced housing

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technologies that improve energy efficiency. The NAHB Research Center, under sponsorship of both NAHB and the Department of Energy, has a research program underway to evaluate and facilitate the adoption of emerging technologies that are close to commercialization. That program has screened scores of candidates and identified a variety of promising new technologies, such as insulating concrete wall forms, gas-fired heat pumps and super efficient window systems, etc., and will continue working to develop plans for accelerating their use in new buildings wherever it makes economic sense.

This continuing research into emerging technologies is important to the NAHB Energy Proposal, to our national energy future, and to our international competitive position. Many steps are required under our system before innovative building products and processes gain approval, reach the market and become accepted. Without continual improvements in technology, energy efficiency may be destined to stagnate over time. NAHB and the NAHB Research Center plan to continue working with the Department of Energy to cut the delays in moving beneficial new technologies off the shelf and into new buildings.

III. The CABO Model Energy Code

I would like to return to the issue of target energy levels and talk about the Model Energy Code. The MEC is the primary energy standard that has been proposed for adoption to residential construction.

NAHB continues to support statewide adoption of unamended nationally recognized model building codes for use in those jurisdictions that elect to regulate construction. The ever increasing acceptance of the CABO One & Two Family Dwelling Code and its Model Energy Code, have reflected great progress towards the acceptance of one building code that builders can use in every governmental jurisdiction in this country.

During our annual convention in January 1991, NAHB Standing Committee on Energy revised its position in regard to the 1989 Edition of the CABO Model Energy Code. Previously, we were concerned that the 1989 version of the Code would impose severe affordability problems forcing higher initial costs with very long pay-back periods. Savings in energy usage would not have justified use of the MEC. However, with the availability over the past few years of lower cost more energy efficient products, in particular glazing, and the ability to use that technology, compliance with the 1989 edition of the MEC is now possible at lower cost. Changes in the MEC are still required to make it a better code, but we now have the energy conservation levels that work.

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NAHB believes the 1989 MEC should be the base level for the NAHB Energy Proposal. The code consistently provides a level of insulation that requires an energy efficient building envelope at a cost that is economically justified. However, we are also aware that all codes need refinement as time progresses, and NAHB will work within the model code process to incorporate changes as necessary. In addition, our goal is to use the NAHB Energy Proposal as the means to develop new energy building designs that could go beyond the code. These designs would utilize new technology, increase the energy savings of the home and in turn provide the builder and home purchasers with incentives that would make the program work on a voluntary basis (as was done previously with the NAHB Thermal Performance Guidelines which are now widely accepted).

IV. NAHB Position on current legislation

As the Chairman is aware, NAHB opposes a cumbersome and expensive mandatory energy rating system. Both the Chairman's bill and Senators Johnston and Wallop's bill are identical in that they direct the Secretary of the Department of Energy and the Secretary of the Department of Housing and Urban Development to promulgate guidelines for state adoption of a numerical energy efficiency rating. NAHB's concern is that these two approaches initially provide for voluntary standards but leave implementation discretionary with the states. NAHB views this provision as opening the door to a mandatory home energy rating system which would be far more cumbersome and expensive than a MEC that will provide for energy efficiency.

NAHB could support a voluntary Home Energy Rating System over and above the MEC to the extent that its existence contributed to improvements in energy efficiency in housing. It is not clear that a rating program, by itself, would have any significant impact other than the cost to rate the home. The goal of rating systems should be to encourage energy efficiency upgrades in existing housing and to make new construction more efficient where size and preference make a difference. Using a rating program merely as a consumer shopping comparison tool may have the negative effect of devaluing the less efficient housing and leaving the less efficient housing to those who can least afford higher energy bills. If a home energy rating system is adopted in legislation, it is important it be a voluntary system that does not contribute to these negative results.

NAHB believes its Energy Proposal sets a minimum base that accomplishes the same objective as the Senators' proposals, but through a different approach. As mentioned earlier, our proposal assumes builder compliance with more upgraded energy efficiency

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standards. Using that as the base, any additional incremental efficiencies above the MEC will be labelled as such and rewarded by incentives. Here the builder's interests and the public interests coincide. The buyer has a more energy conserving home, home builders will be rewarded with more home sales, and of course, the more energy efficient homes there are the greater the total national energy savings.

We oppose Section 306(d), Conforming Amendment, which would replace Section 109 of the Cranston-Gonzalez National Affordable Housing Act (Public Law 101-625). Section 109 requires the Secretary of the Department of Housing and Urban Development, after consultation with an advisory task force of interested public and private parties, to adopt the most recent version of the CABO Model Energy Code. We supported Section 109 as a cost effective approach. Section 306(d) however would eliminate both reliance on the MEC and the formal participation of affected parties. We previously stated our views on the importance of the MEC, which is the basis for our opposition to this particular change. We also believe that formal public participation, as envisioned by Section 109 of Cranston-Gonzalez, can produce an affordable and energy conserving set of standards. Section 109 should remain unchanged and be the principal vehicle for establishing residential energy standards.

We would also oppose the provision of Section 306(a) in S. 341 that would allow federal agencies to set more stringent energy efficiency performance standards. The MEC has sufficient flexibility to assimilate a broad range of designs and addresses a broad range of climatic conditions. Uniform application of the code provides all the flexibility agencies should require.

As the Subcommittee is probably aware, Congressman Phil Sharp (D-IND) has introduced legislation in the House of Representatives. While I understand that bill is pending in the House of Representatives, I would like to direct your attention to that bill for a moment if I might.

H.R. 776, the National Energy Efficiency Act of 1991, approaches energy conservation in the residential sector in a different manner. H.R. 776 contains provisions requiring all states to update and revise their building codes using the Model Energy Code as a guide post. We find language requiring States to adopt a hodgepodge of codes objectionable. NAHB supports statewide adoption of building codes based on a nationally recognized code without amendment. The Sharp proposal would allow states to adopt the Model Energy Code and make amendments to it. This creates undesirable economic efficiencies.

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Our concern about state amendments is twofold. First, most states tend to copy codes done elsewhere and tack on additional requirements that reflect considerations other than affordability and construction practicality, or use the code process as a no growth tool or a method to exclude low cost housing. If we are to ask the American family to pay for a more energy conserving house, they should recoup that cost in lower energy bills. Moreover, lets make sure that these requirements are not just more burdensome and cumbersome regulations reflecting views and theories by states surrounding existing technology. Builders have fought the battle for more uniform application of codes. The MEC has sufficient flexibility to assimilate a broad range of designs and addresses a broad range of climatic conditions. Uniform application of the code provides all the flexibility states should require.

Furthermore, if the House bill references the MEC, we strongly recommend that it be uniformly used by all states. The framers of the MEC have provided a sufficiently broad specification of energy levels to meet all climatic variations.

In conclusion, I want to reiterate our interest in working with the Committee to reach a reasonable solution. NAHB believes that a combination of the Model Energy Code with energy efficient mortgages as a floor, used in conjunction with a system of incentives is more responsive to the market place and will ultimately result in greater energy savings.

Senator WIRTH. Thank you.
Finally, Mr. Kuchnicki.

**STATEMENT OF RICHARD P. KUCHNICKI, PRESIDENT, COUNCIL
OF AMERICAN BUILDING OFFICIALS**

Mr. KUCHNICKI. Thank you, Mr. Chairman.

The Council of American Building Officials appreciates the opportunity to testify at this hearing on provisions of title III of the National Energy Security Act of 1991.

Being the last speaker, I feel like I am being repetitive here, and you are going to hear another me, too, because CABO also disagrees with the requirement of section 3001(d) that would strike section 106 of Public Law 101-625, and insert a requirement that the secretary of Housing and Urban Development shall adopt the Energy Conservation standards for new buildings as promulgated by the secretary of Energy.

Because if HUD should have to follow that course of action, it would likely be using permissively stated standards language, rather than the more easily enforced code language of the model energy code. Most likely, many of the specific requirements will also be different than the model energy code, which, when applied in a jurisdiction that has adopted the MEC, creates conflicting and overlapping requirements unnecessarily.

Senator WIRTH. Let me ask you while we are right there, does anybody disagree with that, that that ought to be stricken? Is there any disagreement with that?

Mr. DETCHON. Well, we testified that we do not want it stricken altogether. We suggested an amendment to it.

Senator WIRTH. But, other than that, all of you agree that the other standard you were talking about, Mr. Kuchnicki, ought to be involved in that? Is that correct?

Mr. KUCHNICKI. That is correct.

Mr. LACH. That is correct, Senator. We believe that it should not be stricken out of the Cranston-Gonzalez act. In addition, we do not think that the time limit should change either. In the Cranston-Gonzalez act it states that it shall be implemented, the model energy code shall be implemented by HUD within a year's time of the enactment of that law. And we do not think that should be delayed. We see no reason for it.

Senator WIRTH. Mr. Kuchnicki, let me let you finish. I did not mean to get into so much. I just wanted to clarify that one point, which so many of you have brought up. Please, go ahead. Thank you.

Mr. KUCHNICKI. Thank you.

Most of the pertinent studies of the last decade, whether from private or public organizations, have focused on the overlap and conflict created by Federal regulations imposed in addition to local and state building codes. And here we have another example. And some of these studies have found that construction costs could be reduced considerably through a program of regulatory relief, particularly relief from Federal regulations, and more reliance of the use of the private sector model codes and standards system.

For example, just approximately 2 years ago Congress passed legislation, Public Law 100-678, which requires Federal agencies to comply with model building codes to the maximum extent feasible. OMB Circular A-119, which has been in existence for some 10 years now, states that Federal participation in the development and use of voluntary standards sets the Federal policy of requiring Federal agencies to use private sector standards and to participate in the development of those standards.

So this proposal then would be in violation of that circular.

President Reagan's commission on housing stated that HUD, Farmers Home Administration and VA should phase out their minimum property standards and depend upon locally enforced building codes, comparable to the model building codes. And this has been done.

The Department of Defense is also considering relying upon the model codes for their health and safety requirements. So the trend is definitely in that direction, rather than a Federal agency creating their own standards.

The MEC is a prime example of a code being based on a consensus developed standard. The MEC was based originally on the ASHRAE 90-75, when first published in 1977. It was updated after the publication of ASHRAE standard 90-80, and has since been changed through the CABO code change process. The MEC then is the code language version of the ASHRAE standard so as to ensure it being enforceable.

In 1982, CABO requested ASHRAE to update its standard 90A-80 so the state of the art in energy conservation for single family homes could be known and the MEC updated accordingly. We expect ASHRAE standard 90.2 to be the updated standard.

In the meantime, changes have been made to the MEC, through the CABO code change process, and it will not be known until a comparison is made between the standards and the MEC as to whether there is consistency between the documents. We endeavor to maintain the MEC in accordance with the state of the art so as to maximize its value. To do otherwise would be a great disservice to the many local and State governments that have adopted and enforced the MEC.

It is our desire and intent to continue these efforts in partnership with the Federal Government. CABO concurs and supports the requirement that Federal agencies secure their buildings, and that HUD assures that newly constructed public housing meets applicable energy efficiency performance standards. We believe those standards should be the requirements of the MEC.

At this time, CABO is participating in a cooperative effort with NAHB and the Mineral Insulations Manufacturing Association to prepare and interpretive document on the MEC for the use builders and regulators. The product will ensure proper and more widespread use of the MEC.

There is a very appropriate and beneficial role to DOE, as previous speakers have stated. There are great needs in the areas of research and training. DOE funds can be utilized to much greater national benefit in these areas. Technical assistance by DOE can help assure that the MEC will continue to be current with the state of

the art, and the development of training aids and training grants will further ensure proper use of the MEC.

CABO appreciates the opportunity to be present at this hearing today, and I thank you.

[The prepared statement of Mr. Kuchnicki follows:]

BUILDING OFFICIALS AND CODE
ADMINISTRATORS INTERNATIONAL, INC.

SOUTHERN BUILDING CODE
CONGRESS INTERNATIONAL, INC.

INTERNATIONAL CONFERENCE OF
BUILDING OFFICIALS



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RICHARD P. KUCHNICKI
PRESIDENT

Statement of the
Council of American Building Officials
by
Richard P. Kuchnicki
on Title III of the
National Energy Security Act of 1991 (S. 341)
before the
Subcommittee on Energy Conservation and Regulation
of the
Senate Committee on Energy and Natural Resources
March 19, 1991

The Council of American Building Officials (CABO) appreciates the opportunity to testify at this hearing on provisions of Title III of the National Energy Security Act of 1991 (S. 341). I am Richard P. Kuchnicki, President of CABO.

CABO has three members--Building Officials and Code Administrators International (BOCA), International Conference of Building Officials (ICBO) and Southern Building Code Congress International (SBCCI). They created CABO in 1972 for the purpose of establishing a communications channel between the building official and congressional, federal and industry organizations. These three model code organizations have more than 10,000 local and state building code jurisdictions as their principal members. It is the representatives of those members that determine the content of the model building codes and subsequently enforce the building codes as adopted by the local and state building code jurisdictions. I have a background paper on CABO and the model code organizations which is available upon request.

I am testifying here today because CABO disagrees with the requirement of Section 3001(d) that would strike Section 109 of PL 101-625 and insert a requirement that "The Secretary of Housing and Urban Development shall ... adopt the energy conservation standards for new buildings as promulgated by the Secretary of Energy pursuant to section 304 of PL 94-385...." If HUD should have to follow that course of action, it would likely be using permissively stated standards language rather than the more easily enforced code language of the MEC. Most likely many of the specific requirements will also be different than the MEC which, when applied in a jurisdiction that has adopted the MEC, creates conflicting and overlapping requirements unnecessarily.

Most of the pertinent studies of the last decade, whether from private or public organizations, have focused on the overlap and conflict created by federal regulations imposed in addition to local/state building codes. Some of those studies found that construction costs could be reduced considerably through a program of regulatory relief, particularly relief from federal regulations. Some of the more significant recommendations, federal policy and federal regulation of the last decade are:

- * Congress - Public Law 100-638 was created to require that federal buildings comply with model building codes to the extent feasible and that federal officials consult with local officials.

- * Office of Management and Budget - OMB Circular A-119, Federal Participation in the Development and Use of Voluntary Standards, set the federal policy of requiring federal agencies to use private sector standards and to participate in the development of those standards. Many federal agencies have promulgated either a regulation or policy stating that the agencies comply with Circular A-119.

* President's Commission on Housing - HUD, FmHA and VA should phase out the use of minimum property standards and depend on locally enforced building codes comparable to the model building codes; local/state governments should adopt model codes without technical amendment; local/state governments should recognize and use existing building department personnel certification systems; the federal government should consider providing limited funding for R&D projects to enhance the technical content in the administration of building codes; and reciprocity should be established between public and private building product evaluation and approval systems.

* Department of Housing and Urban Development, Farmers Home Administration, Department of Veterans Affairs - These agencies have now phased out the health and safety requirements of the minimum property standards in favor of the use of local codes that are comparable to the model codes or, in the absence of local codes, the model code in dominant use in the area. HUD is presently adopting the Model Energy Code into its Minimum Property Standards. HUD and FmHA personnel are now actively participating in the code change processes and HUD has become a member of BOCA, ICBO and SBCCI.

* Department of Energy - Under contract with DOE, CABO developed the "Recommended Requirements to Code Officials for Solar Heating, Cooling and Hot Water Systems" and a Manual for Solar Specialists with a related home study guide for the use of code enforcement personnel in familiarizing themselves with the principles of solar energy. The consensus-based code requirements developed under this contract were adopted into the model building codes within about 18 months. This is an excellent example of the possible federal/private sector activities that benefit the nation.

* Department of Defense - Reliance on the use of the health and safety requirements in private sector codes and standards is presently under consideration by the Department of Defense.

These actions at the federal government level have been taken in recognition of the private-sector process used to develop model building codes. The process is open to participation by all interested organizations and individuals. Changes can be proposed and will be subject to open, public hearings for debate by all interested parties. The code changes cycle of BOCA, ICBO, SBCCI and CABO are conducted on an annual basis so as to be responsive to the development of innovations and the latest research results. And, when it is possible to do so, the model codes will reference or adopt consensus-developed standards.

The Model Energy Code (MEC) is a prime example of a code being based on a consensus-developed standard. The MEC was based originally on ASHRAE Standard 90-75 when first published in 1977. It was updated after the publication of ASHRAE Standard 90-80 and has since been changed through the CABO Code Change Procedures.

The MEC then is the code-language version of the ASHRAE Standard so as to insure it being enforceable.

In 1982, CABO requested ASHRAE to update its Standard 90A-80 so the state of the art in energy conservation for single family homes could be known and the MEC updated accordingly. We expect ASHRAE Standard 90.2 to be the updated standard. In the meantime, changes have been made to the MEC through the CABO Code Change Process and it will not be known until a comparison is made between the standards and the MEC as to whether there is consistency between the documents. We endeavor to maintain the MEC in accordance with the state of the art so as to maximize its value. To do otherwise would be a great disservice to the many local and state governments that have adopted and enforce the MEC.

It is our desire and intent to continue these efforts in partnership with the federal government. It is against this background that we offer our comments on Title III of S. 341.

CABO concurs in and supports the requirement that Federal agencies assure their buildings and that HUD assures that newly constructed public housing meets applicable energy efficiency performance standards. We believe those standards should be the requirements of the MEC.

HUD issued its proposed rule to adopt the MEC on November 5, 1990 and received statements of support from many organizations such as the Alliance to Save Energy, Oak Ridge National Laboratory, National Institute of Building Sciences, National Conference of States on Building Codes and Standards, National Association of Home Builders, Mineral Insulation Manufacturers Association and other industry organizations. These organizations are all aware of the reports by Battelle Pacific Northwest Laboratories and the Department of Energy that support the MEC as cost-effective, energy efficient requirements. The New Jersey Board of Public Utilities prepared a "Draft 1990 New Jersey Energy Master Plan" which was issued in October 1990. It stated at page 147, "BPU's preliminary analysis shows that it is cost effective to have U₂ values somewhat lower than those of the BOCA or CABOMECH (referring to the 1988 MEC), i.e., higher thermal performance."

At this time, CABO is participating in a cooperative effort with NAHB and MIMA to prepare an interpretive document on the MEC for the use of builders and regulators. The product will insure proper and more widespread use of the MEC.

CABO is not aware of any DOE standards having been proposed for public review. If such standards are not in place, HUD can not adopt and properly apply them. If such standards were to be produced, experience tells us there would be a need for an interpretive document such as is now being prepared for the MEC. There does not appear to be any benefit to be derived from an effort to duplicate the MEC and an interpretative.

There is a very appropriate and beneficial role for DOE. There are great needs in the areas of research and training. DOE funds can be utilized to much greater national benefit in these areas. Technical assistance by DOE can help assure that the MEC will continue to be current with the state of the art and the development of training aids and training grants will further insure proper use of the MEC.

CABO appreciates the opportunity to appear and present these views.

Senator WIRTH. Thank you all very much.

Let me go back to the MEC now. As I understand what you all are saying, Mr. Kuchnicki and company. You are saying we ought to stick with the MEC standard, which is updated every year?

Mr. KUCHNICKI. That is correct.

Senator WIRTH. And that is now being used pretty much across the country?

Mr. KUCHNICKI. Pretty much.

Senator WIRTH. And that is updated every year, correct?

Mr. KUCHNICKI. Correct.

Senator WIRTH. Now the Department of Energy, if I understand it, is saying that you all would like to go with your standard. Is that correct?

Mr. DETCHON. Mr. Chairman, I think, if I could, I would draw a distinction here that I think is getting lost about Federally assisted versus non-Federal housing. I think that as one examines the question of how to encourage energy efficiency standards in buildings, that there is a balance to be struck here between no standards at all at the Federal level, versus a rigorous prescriptive Federal standard that would apply to all buildings.

We believe that there is a balance that involves encouraging State and local jurisdictions to adopt codes equivalent to the MEC 89 version. We are all in favor of that. We have been directed by Congress to promulgate standards for Federal buildings, including residential buildings, and we are going to come forward in the summertime with voluntary standards.

Senator WIRTH. When was DOE directed to do that?

Mr. DETCHON. That was in 1976.

Senator WIRTH. And have you done it since 1976?

Mr. DETCHON. No, there was a long period of inactivity during the previous administration.

Senator WIRTH. So the department was directed to do that in 1976. It is now 1991.

Mr. DETCHON. We have in the past—

Senator WIRTH. And you are asking us to what?

Mr. DETCHON. Well, we have in the past year promulgated Federal standards for commercial buildings.

Senator WIRTH. Let us stick with residential for right now. We will come to commercial in just a minute with Mr. Conover.

Mr. DETCHON. We have promulgated standards for Federal residential buildings, and we are coming forward in June with standards for non-Federal residential buildings, but those will be voluntary.

Senator WIRTH. Now what is your argument for not just following what Mr. Kuchnicki is recommending?

Mr. DETCHON. Well, we believe that our standards are going to be somewhat better, stronger than the model energy code.

Senator WIRTH. Then, if you update your standards every year, why do you not sit down and say, well, there are areas where it ought to be stronger? And rather than going through the requirement that, it would appear to me, only DOE is supporting, why do you not sit down with them and say, well, these are areas that ought to be upgraded? And I would assume you would be open to that. Would you, Mr. Kuchnicki?

Mr. KUCHNICKI. Oh, absolutely.

OMB Circular A-119 encourages Federal agencies to participate in this project.

Senator WIRTH. Why is not that a much easier thing to do? Maybe I do not understand it. Why is not that just an easier thing to do than for us to go to a different set of standards than the one that appears, from what everyone has been saying, to be a broadly supported one?

Mr. DETCHON. Well, I can see how it would be somewhat easier, Senator, but we believe that we can bring some special expertise to the question and some objectivity.

Senator WIRTH. Well, cannot you bring that expertise sitting down with Mr. Kuchnicki and saying, our expertise would suggest that these changes ought to be made?

Mr. DETCHON. Yes, sir, we could.

Senator WIRTH. Why is not that an easier thing to do, to accomplish what we all want to accomplish more rapidly, than to go your recommended legislative route? Maybe there is something in your recommendation for going the legislative requirement route from DOE that I do not understand.

Mr. DETCHON. Well, I think that if we could be assured that the model energy code would be consistently updated to reflect our best assessment of what cost-effective improvements could be made, I think that would be equally appropriate.

Senator WIRTH. Well, it would seem to me that that is what you all want to try to do anyway, is it not, Mr. Kuchnicki?

Mr. KUCHNICKI. Oh, absolutely. The model code process, whether it is the model energy code or the model building codes, it is an open, public consensus process, where anybody can present technical data, can submit code change proposals. The process is open to everybody, and the home builders participate actively in this process, as do all the product manufacturers. The whole building industry except the Federal Government.

Senator WIRTH. The question then that I would have would really come from a different direction. Is that standard strong enough? Or is it a lowest common denominator standard? It seems to me as you set about setting a standard there is always a dynamic to go lower, rather than higher, I think, in something like this, except for Mr. Lach's group, who obviously wants to go much higher, I would think.

Tell me, what are the dynamics of setting that so you do not get to a lowest common denominator, Mr. Buchert?

Mr. BUCHERT. Mr. Chairman, we are always at odds with the CABO code body with which we are working very closely with in developing the codes. And they are never looking at the lowest common denominator, let me assure you.

NAHB goes one step further. We not only ask that you adopt, for example, the CABO model energy code, but we want you to mandate that it basically be unamended. Now the reason for that is that if you let the States go State by State and begin to second-guess all of the technology which basically has the brightest and best minds in research behind it and is established and is updated continually on an ongoing basis as new technology in the way of material and equipment comes on board.

And you let the States each begin to look at that separately, and you let the States each begin to second-guess it, update it as they see fit, take parts and pieces of everybody's code, and end up with a code, you end up with inefficiencies.

We know, as an industry charged with delivering affordable housing, that the best system is a uniform system that takes a look at things climatically across this country and says, look, this is the way to build housing. It gives you the efficiencies and the cost benefits.

The second thing that happens, if I just may for a moment, Mr. Chairman, is that as this thing in the State is adopted and then it goes down to the local board of building standards, they then amend it again for other purposes. Most of them are no-growth purposes and to keep out low-cost housing, and to get rid of the riff-raff. If they only want million-dollar houses, 5,000 square feet and up, in their community, they will make sure that the energy standards are high enough to keep everybody else out.

And what we are saying is this has to address the broadest scope. It has to be most efficient. And it should be unamended. And this code body, working with the Department of Energy, the home building industries, the manufacturers of equipment, and other interested parties should annually look at the code and update. You are absolutely right. Everybody should participate in this process.

Senator WIRTH. I understand your argument for uniformity, and it seems to me that also would be helpful in terms of training. We are going to get to how do you enforce it in terms of training the people who have to apply these standards.

Mr. BUCHERT. Absolutely.

Senator WIRTH. If there is a more common set of standards, it is going to be easier for building officials and so on, many of whom have got to be part-time at best, right, to do that?

Mr. BUCHERT. Absolutely. And even more importantly, the application of Freddie Mac and Fannie Mae in the way of looking at mortgages. You know they absolutely have to understand that you have one standard.

Senator WIRTH. Yes, I can understand the virtue of uniformity. The question I would ask, again, is how would one know that the standard that is coming out is not a lowest common denominator standard? What is the dynamic that presses that higher, rather than lower? Larry?

Mr. LACH. I would just like to address that just partially, Senator. I concur with Jay that a consensus standard really is in the best interest of the country because what it does is this. In spite of the fact that, sure, our industry would like to sell all the insulation we could, if the buildings that this insulation is for, if they are then being made to be non-affordable because an excess of insulation is required, let us say, then that is not going to do us any good. Because we could have the highest, most stringent codes in the world, but if those houses are not being built, then we do not have any houses to put that insulation in.

So what we are always striving for, and we have funded many studies to do this, is to find a balance between energy efficiency and affordability. And I might also say that those of us who manufacture insulation also manufacture other products that go into

buildings. So we are always looking at the affordability for the cost effectiveness factor. And I think that is important to all of us to keep in mind.

Senator WIRTH. Let me interrupt if I might. I know Mr. Prindle has got to go catch a plane. Let me ask you two things, Bill. If you want to, one, comment on the three questions of the standards and enforcement, and second, comment on the uniform mortgage financing issue that has come up here.

It was my understanding that this whole idea came out of a conference that the Alliance had a couple of years ago on mortgage financing and energy efficiency. I am sure the idea had been out there, but kind of coalesced at your conference. That is section 946 of the Cranston-Gonzalez housing bill. Should it be stronger than section 946? Is this adequate? Should this be strengthened? If so, how should it be strengthened?

That was one of the other issues that had come up, and I would like for you to have a chance to comment on it before you leave.

Mr. PRINDLE. We were gratified to see the language appear in the National Affordable Housing Act, which requires HUD to produce a plan for mortgage financing incentives for energy efficiency. However, there could always be a little more teeth in the requirement. The language in that section is something like a rabbit going through a briar patch. It comes out the other side, but there is a lot of fur left hanging on the thorns.

I think the requirement could be strengthened, for instance, by requiring disclosure to mortgage applicants that these incentives are available, for instance. It is simply a way to trigger awareness in the marketplace. That kind of disclosure requirement, alone, could expand market awareness for it. I think that is the kind of thing that this bill might want to consider as an additional point.

I did want to echo Larry Lach's argument on the least common denominator issue for standards. I think the way to make sure that the model energy code is not a unbalanced or least common denominator document is to make it the vehicle of record, so that the standards bodies and the Federal agencies and the national laboratory researchers and anybody else who has got something to say on this is required to come to the MEC meetings. My only complaint with the MEC meetings is that not enough people come and present their views.

If everybody came and the arguments took place in an arena that was open, as it is, I think we will get the best standard we can get. So, everybody come.

Senator WIRTH. Is there anything else you might like to add before you have to go on adoption or enforcement?

Mr. PRINDLE. Well, just to echo our recommendation that we think the States should be asked to go through a review and certification procedure as part of this bill. Our study shows ample cost effectiveness for the MEC standards as they are now, let alone how they might be in a couple of years. We think over a period of 4 years or so, States should undergo a serious reevaluation of where their codes are.

Senator WIRTH. What sanctions if a State does not do that?

Mr. PRINDLE. Well, I would not pretend to speak for the Congress on that, but one could always make the receipt of Federal mort-

gage assistance contingent on compliance with energy standards, for instance. I think that is a very simple way to do it. That would certainly get the attention of a lot of people.

Senator WIRTH. Thank you very much. I know you have to go.

Let me come back while we are right on it. Anything more on MEC? Should it be made the vehicle of record?

Mr. DERCHON. Let me just address the value of Federal standards one more time, Mr. Chairman. I think that you raise a good point, and it was responded to appropriately, about the public participation in the process. Obviously, if you have a Federal standard you have a well established public process for issuing any kind of a regulation. I think that is one of the virtues of the process. It brings an element of impartiality and objectivity to the process.

I would also say that the standards that we intend to come forward with in the summer provide some greater flexibility than the MEC does. The MEC is a prescriptive approach. We are going to offer a three-pronged approach, one prong of which would be a standard prescriptive approach. So that there would be the certainty available to the builder if that was the choice. But the builder would also have a choice of balancing on a point system certain kinds of improvements, versus others, to get a net energy savings, as opposed to having to meet every specific requirement.

There will also be a computer model approach, to approach the building as a whole building in an integral way. This gives the builders and the architects more flexibility in their design, which we think is an attractive feature, which they would appreciate.

We believe that the prescriptive approach has its place and is a necessary backstop, but we think that the greater flexibility is also attractive.

Senator WIRTH. Mr. Conover.

Mr. CONOVER. Relative to the MEC, I heard the term consensus used. Correct me if I am wrong, voting as to what goes in the code or does not go in the code is not made by a balance of interested and affected parties. It is only the code officials. And I wanted to make the distinction that the term consensus as defined by the American National Standards Institute, does not necessarily mean unanimity, but it means a broad, almost unanimous approval of what is in there by all interested and affected parties.

Recognize that the MEC was originally established and in fact funded by DOE back in the late 1970's to codify what at the time was a fairly complex standard, standard 90.75. To make it enforceable, I think technically the MEC has gone beyond ASHRAE. Hopefully, ASHRAE will catch up through the 90.2 effort.

Again, I just wanted to make the distinction that the term consensus you should understand is a unique definition, and I do not think it applies to the MEC process.

Mr. KUCHNICKI. I just want to make a statement in response to the gentleman from DOE. The model energy code is a performance document. It is a not a prescriptive code. I mentioned in my testimony that CABO has been working with NAHB and the Mineral Insulations Manufacturing Association in putting together an interpretive document because there is the need for a prescriptive document to go along with the MEC to help builders determine

how to comply with it. So it is a performance document, as are all model building codes.

Mr. BUCHERT. Mr. Chairman, what we see as builders in the MEC is, number one, a simplified way to apply this almost immediately. Because the MEC exists. It is able to be updated. It is ongoing. And it is a sensible way to apply this.

For example, I build \$65,000 homes for people in a low-income range. They are talking about a voluntary system, for example, at DOE, where people would get points for doing special things. This is only going to affect the people in 2,000, 3,000, 4,000, and 5,000 square foot homes who can afford to do all these great things to get these grandiose points to get credit for them, that is going to enhance their mortgage. What about the people on the lower end that can hardly afford anything? They are not going to have a choice of points.

What they need is a simple code across the board that allows me to take that \$65,000 house maybe to \$67,000 or \$68,000, and they then pick up 2 or 4 points in their ratio of qualification on a mortgage, which makes it affordable. And they pick up the difference on their energy savings bill. This affects people on the bottom end, and that is where we really need to affect people.

I mean to apply points to a bunch of people in million-dollar houses so they can go out and decide on Pella windows, you apply Pella windows to my buyer, and the windows will cost more than the lot. I mean it just is not going to work.

Senator WIRTH. Well, that is what we were trying to do in the legislation on the energy efficient mortgage. That was exactly the idea, that if you could prove that people can save money there, they got more money in their pocket, and therefore more people can qualify. That was the whole idea.

Mr. BUCHERT. But it needs to be a simple application at the bottom.

Senator WIRTH. I understand.

Mr. BUCHERT. The first layer has to be mandatory, and then the second layer, if you want to get more enhancement, has to be voluntary on larger homes, based on personal preference.

Senator WIRTH. Could I ask all of you to do this on the energy efficient mortgage. If you could give us your ideas as to how that ought to be strengthened, if it should be. Should that be fleshed out? Should that be made more accessible more rapidly, Mr. Buchert, for the people buying your houses?

Mr. BUCHERT. Absolutely.

Senator WIRTH. Mr. Prindle, what should be done with that? What more came out of the alliance conference that should be in the legislation? What tufts of hair got taken out on the way through the briar patch?

Because I think we have an opportunity now, and there is a pretty broad consensus, that this ought to be done. I do not sense any disagreement with that at all. This was at one point a very controversial idea, and it has now become an acceptable one, and I think that is great. So let us hone it down in the best way we can, and we would really like to hear from you all.

Now, let us jump from housing standards to commercial building standards. Is not that the next level of items to look at? The MEC

applies to all buildings. Is there a similar and equally accessible kind of a code for commercial buildings?

Mr. KUCHNICKI. Well, the MEC applies to all buildings, including commercial buildings.

Senator WIRTH. All buildings. It is not just housing, it is commercial also?

Mr. KUCHNICKI. That is correct.

Senator WIRTH. I have been focusing my attention here on the housing issue. All commercial buildings have a similar set of standards, is that right?

Mr. KUCHNICKI. That is correct. Well, the MEC applies to housing and commercial buildings, to all buildings.

Senator WIRTH. You had a comment on that related to commercial buildings, Mr. Conover?

Mr. CONOVER. Yes. The standard upon which the MEC was originally based, as has been brought out in testimony, was ASHRAE standard 90.75. It was updated in 1982. In fact, I submitted 228 changes to the MEC process to do this, to update the original MEC to be in technical compatibility with ASHRAE 90A-1980.

Since that time, in February of 1989, ASHRAE has published standard 90.1, which covers everything but low-rise residential structures. It is essentially for high-rise residential and all commercial buildings, an update of the original ASHRAE standard 90. DOE was very much involved in that process of that standard. They provided a lot of support in terms of a research base and in terms of staff participation as members of the committees that were developing the standard.

The MEC, of course, has yet to, if you will, catch up, although recently a code change was submitted and I believe approved to adopt the ASHRAE standard 90.1 by reference as an alternative to the commercial buildings criteria in the MEC.

Senator WIRTH. Is there any difference of opinion that the MEC, as amended, as you are suggesting, is the standard that ought to be adhered to for high-rise residential and commercial buildings? Is there agreement that that ought to be done? Is that right?

Mr. CONOVER. My feeling is ASHRAE standard 90.1 should be the standard of reference for commercial and high-rise residential buildings.

Senator WIRTH. You and Mr. Kuchnicki are not in any disagreement on that, is that right? Use MEC as reference to the ASHRAE standard, is that right? I just want to make sure of that.

Mr. CONOVER. Recognize that the MEC references it now as an alternative to a codified version of standard 90A. And so what you have is a situation—

Senator WIRTH. Well, we will figure that out.

Mr. CONOVER. Okay.

Senator WIRTH. I am totally lost in that jumble. But, in any case, as a general principle, we are pursuing the same one established for residential units and using the MEC.

Mr. DETCHON. I think that is right. I would just add to what Mr. Conover said. Not only did we support ASHRAE in its efforts, but it was a collaborative effort on the Federal standards for commercial buildings. If that ASHRAE standard, which is very similar to what the Federal standard is, could be adopted—

Senator WIRTH. So we are generally in agreement on question number one on the standard, is that right? I mean I do not sense any disagreement.

The question then becomes how does it get adopted? And I know we are getting into what may be more difficult political issues. Do we require States to adopt the standards, or do we require that the standard gets adopted?

Mr. BUCHERT. Not everywhere in the country do they use the model energy code. Some of the more rural areas of the country do not have any building codes at all. Builders just go out and build apparently. They certainly does not happen in Cincinnati, Ohio, but it does happen in certain parts of the country.

I think what we visualize is, CABO, for example, is one of many model building codes around this country, you have BOCA, you have ICBO, you have Southern, and so on and so forth, they would all basically adopt CABO's model energy code. And the States that use those model codes would obviously adopt them. Whether that would cover all 50 States I am not sure.

Senator WIRTH. Is there anything that we have to do in this legislation?

Mr. BUCHERT. You would have to say that you set that as the standard.

Senator WIRTH. Other than setting the standard, is there anything that we have to do to assure that States pick up and use that standard, or are they doing it anyway?

Mr. BUCHERT. No, they are not doing it anyway. Some are and some are not. Some are amending.

Senator WIRTH. When you set the standard, Mr. Kuchnicki, what happens?

Mr. KUCHNICKI. Well, the trend is certainly in that direction. Some States are more responsive than others. Every State does not have a Statewide building code, and so in those cases where home rule is strong, it is up to the local jurisdiction to pick up on it. But the trend is definitely in the direction of adopting the latest edition of the model energy code.

Mr. DETCHON. Mr. Chairman, just to give you a little context. According to our information, 24 States have mandatory Statewide energy conservation codes. And all 50 have some sort of energy conservation code, but 24 have mandatory Statewide codes.

Senator WIRTH. Are they about the same as CABO standards?

Mr. DETCHON. No, not all. As of 1989, and this is not up to date, but approximately 43 States had standards that were based on criteria developed in 1980 or before. So, generally speaking, I would say that there are only a few States that are in the leadership position of having fully adopted the MEC to the 1989 standards.

Senator WIRTH. That obviously begs the question then, the next issue is if there are only a handful of States that have the standard that we have tortuously decreed ought to be the standard, then should we be requiring that that standard be adopted by all States within a period of time?

Mr. DETCHON. I think that touches on a very difficult States' rights kind of question. But I think that legislation which was only passed last year, the National Affordable Housing Act, by applying these kinds of standards to Federally assisted housing, including

FHA-type housing, will provide a substantial incentive to builders across the country to conform to the model energy code, whether or not it is specifically applicable in that jurisdiction.

So that will lead, I believe, the States and local jurisdictions to be more sympathetic to that.

Senator WIRTH. Should we then say if you do not want to take it on frontally that every State shall adopt, do you want to say that after 1995 no VA, FHA, weatherization assistance shall be made available to any unit that is built that does not comply with the standards?

Mr. DETCHON. In the national energy strategy we do not go so far as to include weatherization, but we do say the FHA, VA, FMHA-type support should serve as a basis for compliance.

Senator WIRTH. And saying that after a certain point it will not be made available unless this State has met those requirements? Is that what you are saying?

Mr. DETCHON. No. That that housing needs to meet the requirements, not putting any requirements on the States themselves. Just setting a leadership example for them to follow.

Senator WIRTH. Why not take the next step and say that it will not be made available unless, if in fact we are concerned about energy conservation?

Mr. DETCHON. Well, traditionally, these areas have been within the jurisdictions of the States to handle.

Senator WIRTH. We do not have to spend Federal taxpayer monies, for example, to weatherize houses if they are not energy efficient, do we?

Mr. DETCHON. That would seem to be a contradiction, Mr. Chairman. If they are not energy efficient, that is why they need to be weatherized.

Senator WIRTH. Mr. Conover.

Mr. CONOVER. I am thinking back to Public Law 94-163 which was passed, I believe, in December 22, 1975, which suggested that all the States should do right turn on red, energy and procurement practices, and you shall adopt an energy code or standard no less stringent than ASHRAE standard 90.75. It was mandated, 90.75. At the time it was the bible. And the Federal Government said all you at the State and local level will get religion. And all 44,000 units of local government and their chief building officials will go out and preach this bible.

In reality, you found at that time a lot of State legislation being passed adopting ASHRAE 90.75, and there was no enforcement mechanism. It was pure and simple, let us get the law passed. Let us get it in. And let us get our money. You did not have the enforcement mechanism.

We can talk about whether the bible should be the MEC or ASHRAE, or whether it should be mandated by Congress, or whether you should give incentives to the States, but in reality the rubber meets the road based upon the capabilities of the 1,201 municipalities in New York State, the 2,569 in Pennsylvania, et cetera, et cetera, and the vigor with which the local building official, whether it is dealing with residential construction or commercial construction, has the support, understanding, and ability to go

in and check to make sure that whatever standards are adopted are in fact being enforced.

I find myself, and I have taught local officials in 22 States on energy codes, getting into long discussions about how you calculate U values and OTTB's, and their eyes glaze over. And if anything I leave them with, it is do not get into an argument about whether it ought to be R-30 or R-19, or whether it is double pane or single pane or going to 5 decimal places. If you do anything, Mr. Local Inspector, make sure whatever is there is properly installed, there are no short backs. There are no kicked-in holes in the siding, and things of that nature. Make sure whatever is there is properly enforced.

In my opinion, you can write all the codes you want, you can write all the standards you want, you can do all the research you want, but in reality the people on the front line are the 44,000 units of local government. And some States that assume that responsibility for local government by State law, that is where the rubber really meets the road. And I think, in my professional opinion, what you need to be focusing on, and where I think DOE can provide a lot of support is to those units of State and local government.

Make sure that they have the information they need, rather than, as I have talked to a lot of officials, they pray some times that the code book is in fact thicker, because 1.5 inches is your typical doorstep height, and a lot of them would like to have a thick code book so they can go ahead and keep the door open with it. They really need some assistance. They really need some rules of thumb, some ideas for red flags, and they are the ones that are out there, the last ones that see the wall sealed up, there where it really happens.

Senator WIRTH. So you would argue that rather than requiring this to happen, a more productive approach to be taken is to make grants and do training programs, and the department ought to be emphasizing that kind of technical help and technical assistance? Is that right?

Mr. CONOVER. That would be my feeling. You have to realize, too, that the regulatory system in each of the 50 States is totally different in terms of the authority that a State agency has to mandate something to local government. Or local government may say the heck with you. We are not going to do what you say, and so on and so forth.

All 50 States are different. They have unique regulatory systems. They have unique systems to certify contractors, to certify architects and engineers, building officials, and I think a grassroots approach and a bubbling up from, we will say, the bottom of the pyramid may end up being more productive. You can see the energy savings that way, rather than walking out of the room and saying, well, we have just mandated everybody adopt this great code. Look at all the energy we are going to save.

Senator WIRTH. Lots of local differences?

Mr. BUCHERT. Sure.

Mr. CONOVER. Yes.

Senator WIRTH. That local inspector may be out for a ride on the cigarette boat and you cannot find him.

Mr. CONOVER. I am aware of 3 counties in the Atlanta metropolitan area where one inspector is responsible for inspecting non-incorporated areas of 3 counties in metro Atlanta. And all three have different codes. And this is building, mechanical, plumbing, et cetera. I sympathize with him trying to figure out which edition and what amendments have been applied.

Senator WIRTH. Mr. Buchert.

Mr. BUCHERT. Mr. Chairman, let me go back to what I said before so you do not get the wrong impression. First off, CABO is one of several uniform model codes. When you look across the board, most States have adopted a model code in this country. If you took maybe a half a dozen chapters and rendered a few words, almost all the model codes would be very similar when it comes to one-, two-, and three-family. I mean there is hardly any difference.

Secondly, I would hate to leave the impression here with you that inspections are not done. For example, on the 8-county MSMA around Cincinnati, Ohio, which three are in Kentucky, one in Indiana, and four in Ohio, we do not have one for 3 counties, we have about 100 for each county. And believe me, with every house I build, before I can put cladding on the outside, whether it be brick, veneer, or siding, that inspector comes out to make sure every joint is taped, every crack is stuffed, every hole in the insulation is repaired or patched or replaced, and then I can clad the exterior. Then, before I can go to drywall on the interior, they do the entire inspection over again before I can clad the interior. Every window has to be stuffed, every door has to be stuffed, every hole a wire goes through has to be stuffed.

This is all to answer the energy standards. The MEC takes it one step even further, frankly, than the Ohio Energy Code, for example. If this code was mandated it would take us a step further. I do not really think we have, as builders across this Nation, a big hole in the vast majorities of the counties and municipalities and cities in code inspection.

For example, in Hamilton County, Ohio, which is the prime county for Cincinnati, of the 26 municipalities, 21 of them the county does the inspection for them under a contract basis. So you have uniformity on inspections. And I think that is typical and true across the country.

So I do not think looking at a model energy code and applying it to national model codes is going to be this disarray. It is going to have one heck of an effect. I am going to say it is probably going to have 90 percent efficiency or better than what you have now, or everybody making up their own code and modifying it and amending it the way they want.

Senator WIRTH. Do we have any other comments from you all? Reid.

Mr. DETCHON. Well, just to clarify the last comment, as I understand it, the model energy codes may exist, but they may be based on criteria set in 1980 or before. So it is a question of how frequently they are updated. We believe that MEC 89 or the DOE standards are going to result in an improvement in energy efficiency compared to current practices of 15 to 25 percent. So there are continuing improvements that can be made.

And I would just like to associate myself with Mr. Conover's remarks about the importance of the local enthusiasm for this project. It is easy to dictate from here.

Senator WIRTH. Well, I thank you all very much. I would encourage you to get your comments back to us on the issues that we have brought up, particularly looking at the energy efficient mortgage. And I want to commend you all for doing the impossible. You have made this topic interesting.

[Laughter.]

Senator WIRTH. It was very good. It is very important, and you have really done a very good job. Thank you very much. This was a very interesting and productive afternoon. I will also include in the record a statement from Senator Wallop. Thank you all for being with us, and we will be in touch soon.

[Whereupon, at 3:50 p.m., the hearing was adjourned.]

[The following statement was submitted for the record:]



STATEMENT OF
LIBBEY-OWENS-FORD CO.
Toledo, Ohio

before a joint hearing of the

U.S. SENATE

SUBCOMMITTEE ON
ENERGY REGULATION AND CONSERVATION
COMMITTEE ON ENERGY AND NATURAL RESOURCES

regarding

THE NATIONAL ENERGY POLICY

WASHINGTON, D.C.

MARCH 19, 1991

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People all over the world are becoming increasingly aware of the fragile state of our environment and recognizing the need to operate more energy efficiently. In that regard, the federal government can, and should, play a particularly important role in helping America become both energy efficient and energy independent. It is critical that the federal government provide both leadership and incentives for the general population to conserve energy.

In regards to conservation, there exists a mechanism to encourage the general population to upgrade the energy efficiency of their homes, buildings, automobiles, and appliances, through the mechanism of an energy tax credit. Such a tax credit was enacted by the Energy Tax Act of 1978, but has since expired in 1985. House Committee report — (p.217) points out that, "Generally it found that the energy conservation credit has achieved its purpose". We believe that it is time once again to encourage conservation, through such a credit, as an integral part of a national energy policy. We believe that there has been substantial progress made at introducing new energy efficient construction products since 1985, and that a renewal of the energy tax credits would spur the speedy adoption of such energy efficient products.

Another important influence in energy efficient windows is the formation of the National Fenestration Rating Council (NFRC), made up of Industry, Government and Utility representatives, with the intent of developing a credible, fair window rating and labeling system recognizing high performance windows, and giving the consumer a guide towards the purchase of energy efficient window products. LOF fully supports the activities of the NFRC, and encourages government funding and support for this activity.

As an example of practical application, window glass technology has made dramatic advances with respect to energy efficiency - advances far more dramatic, and with significantly greater net energy gains, than ever before. The practical application of new technology in something as simple and everyday as a window can translate into one of the best ways to achieve our goals of energy efficiency and independence. Natural energy sources, like the power of the sun, can now be efficiently captured through windows.

In that regard, it would be useful to describe what may appear to be an everyday product, but, through the application of breakthrough technology, becomes one of the most efficient yet practical ways to save significant amounts of energy on a global basis - which the federal government now has the opportunity to encourage in the United States.



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A decade of research and development by Libbey-Owens-Ford Co. resulted in the most dramatic breakthroughs in energy efficient window glass in the past 30 years — a new "low E" glass that actually provides a net energy gain within a home or building instead of an overall energy loss; plus a new batch-tinted glass offering an unprecedented combination of solar control, UV Blockage, and high daylight transmittance.

Low E, or "Emissivity", is a generic description for a glass product that has a special coating to improve its insulating ability. While a low E coated window is letting the warmth of the sun into the room, it's also preventing the already heated indoor air from escaping. Even this simple explanation makes it easy to appreciate the value of low E glass in everyday applications.

Low E products have been around for a few years, attracting a growing number of enthusiasts because of their heat management properties. Recent technological breakthroughs by Libbey-Owens-Ford Co. have now improved those properties to the point where a viable, free source of net energy gain is created. Windows can now be used as energy sources, an incredible attribute.

This low E coating is produced as part of the glass manufacturing process. As such, it is literally fused into the surface and is as durable as glass. Also, the coating is COMPLETELY colorless, such that there is no appearance penalty in using this glass in windows.

The practical application of this technology on a nationwide basis could have dramatic implications. For example, on an annual basis, windows in the United States are known to consume 4 % of the total annual energy budget. This equates to around 600,000,000 barrels of oil per year. Using currently available technology, this figure could be reduced by 40 %, which would drop this consumption to 240,000,000 barrels of oil per year. This drop would not only provide a direct economic benefit, but perhaps more importantly would provide greater energy independence while positively impacting the ecological problems associated with fossil fuel consumption.

Upgrading a window from double glazing (two panes of glass) to high performance low E double glazing will save over 250 gallons of oil over the life of the window, as determined by the Lawrence Berkeley Laboratory, Building Science Division, a laboratory of the U.S. Department of Energy. Low E coatings have been remarkably successful in the building industry to date, capturing about 20 % of the total window market since their introduction in 1982. But that means that four out of every five windows sold last year could have used low E but did not. Additionally, there are about 20 to 25 billion sq.ft. of glass in existing windows that could be replaced or retrofitted with LOF's durable hard-coat low E glass. A very rough estimate of what that would mean to the U.S. is a savings of 170,000,000 of barrels of oil every year, or about 30 % of the Alaskan oil pipeline, which is worth nearly \$ 6 billion a year.



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In the southern parts of the United States the Low E product can be combined in a window with LOF's new batch-tinted glass to minimize solar energy gain during the cooling season to reduce air-conditioning loads, while maintaining high daylight transmittance (important to minimize artificial lighting expense), and block the ultra-violet (UV) transmittance to minimize carpet and furniture fading.

In conclusion, we believe the message is simple. We would encourage the federal government, both the administration and congress, to take a fresh look at energy conservation as a key component of a national energy policy. Towards that end, we believe that windows and new glass technologies can play a key role in this conservation effort. Libbey-Owens-Ford Co. believes that practical opportunities exist today for the federal government to lead the nation toward energy efficiency and energy independence.

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